Mini System

FW-C30/21/21M/30/37

FW-C3/37 & FW-C35/37

Service
Service
Service

Service Manual

COMPACT disc DIGITAL AUDIO

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CLASS 1
LASER PRODUCT

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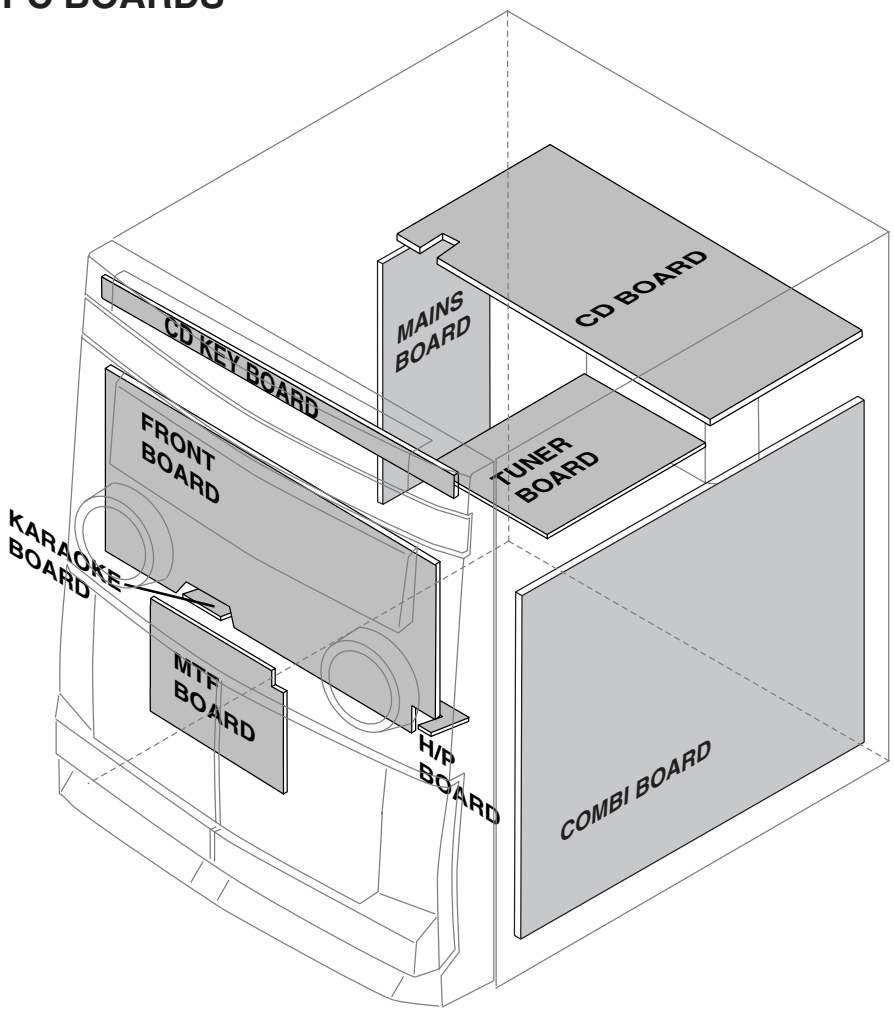
PHILIPS

LOCATION OF PC BOARDS



VERSION VARIATIONS:

Type /Versions: / Features & Board in used:	FW-C30				FW-C3		FW-C35	
	/21	/21M	/30	/37		/37		/37
Dolby B								
Incredible Surround								
Karaoke	x	x						
News								
RDS								
Rotary Encoder (volume control)	x	x		x		x		x
Jog Shuttle	x	x	x	x		x		x
Voltage Selector	x	x						
Aux Input	x	x	x	x		x		x
Digital Output								
Headphone Socket	x	x	x	x		x		x
Line Output								
Subwoofer Output	x	x	x	x		x		x
Surround Output								
Matrix Surround Loudspeakers						x		x
Tuner board - ECO5 Sys	x	x	x	x		x		x
Tuner board - Tuner 95								
Standby with clock display	x	x	x	x		x		x

SPECIFICATIONS

GENERAL:

Mains voltage : 110-127V/220-240V Switchable for /21/21M
120V for /37
220V for /33
220-230V for /22/34
230V for /25
230-240V for /30

Mains frequency : 50/60Hz

Power consumption
Standby : < 15W
Active : < 70W

Clock accuracy : < 4 seconds per day

Dimension centre unit : 265 x 310 x 340mm

TUNER:

FM

Tuning range	: 87.5-108MHz 65.81-74MHz for /34 [1]
Grid	: 50kHz (& 30kHz for /34) 100kHz for /37
IF frequency	: 10.7MHz ± 25kHz
Aerial input	: 75ohm coaxial 300ohm click fit for /37
Sensitivity at 26dB S/N	: < 7µV
Selectivity at 600kHz bandwidth	: > 25dB [> 30dB]
Image rejection	: > 25dB [> 60dB]
Distortion at RF=1mV, dev. 75kHz	: < 3%
-3dB Limiting point	: < 8µV
Crosstalk at RF=1mV, dev. 40kHz	: > 18dB

MW

Tuning range	: 531-1602kHz 530-1700kHz for /21/37
Grid	: 9kHz 10kHz for /21/37
IF frequency	: 450kHz ± 1kHz
Aerial input	: Frame aerial
Sensitivity at 26dB S/N	: < 4.0mV/M
Selectivity at 18kHz bandwidth	: > 18dB
IF rejection	: > 45dB [> 40dB]
Image rejection	: > 28dB
Distortion at RF=50mV, m=80%	: < 5%

LW

Tuning range	: 153-279kHz
Grid	: 3kHz
IF frequency	: 450kHz ± 1kHz
Aerial input	: Frame aerial
Sensitivity at 26dB S/N	: [< 7.0mV/M]
Selectivity at 18kHz bandwidth	: [> 30dB]
IF rejection	: [> 25dB]
Image rejection	: [> 35dB]
Distortion at RF=50mV, m=80%	: [< 5%]

AMPLIFIER:

Output power
Left/Right : 2 x 25W FTC [2] @ 6 ohm ± 1dB
2 x 35W RMS [3] @ 6 ohm ± 1dB
Surround : 2 x 2W [4] @ 6 ohm ± 1dB

Frequency response within ±3dB : 50Hz-15kHz

Dynamic Bass Boost : DBB ON, DBB Off [5]

Digital Sound Control : Jazz, Techno, Optimal, Rock [5]

Input sensitivity
Aux-in : 700mV ± 3dB at 600ohm
Mic : {2.5mV ± 3dB} at 600ohm

Output sensitivity
Sub-woofer : 1.5V ± 3dB at 22kohm
Headphone : 18mW at 32ohm

CASSETTE RECORDER:

Number of track	: 2 x 2 stereo
Tape speed	: 4.76 cm/sec ± 2%
Wow and flutter	: < 0.4% DIN
Fast-wind/rewind time C60	: 130 sec
Bias system	: 75kHz ± 5kHz
Rec/Pb frequency response within 8dB	: 80Hz - 12.5kHz
Signal to noise ratio (type I)	: > 48dBA

COMPACT DISC:

Measurement done at output conn. of the CDC module.

Frequency response within ± 1.5dB	: 20Hz - 20kHz
Output level (in Vrms)	: 550mV ± 2dB unloaded
Signal/Noise ratio (A-weighted)	: > 80dBA
Distortion at 1kHz	: < 0.003%
Channel difference at 1kHz	: < 1dB
Channel separation at 1kHz	: > 60dB

De-emphasis : 0 or 15/50 mS (Switched by subcode on the disc)

[....] Values indicated are for "Tuner 95 Board" only

{....} Values indicated are for /21/21M only

[1] Default setting is OFF, to switch on please refer to page 3-4

[2] 60Hz - 12,5kHz, 10% THD

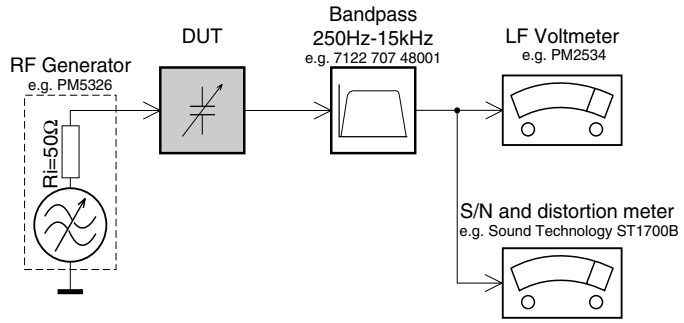
[3] 1kHz, 10% THD

[4] Only for FW-C3 & FW-C35

[5] Frequency response in each setting is software controlled.

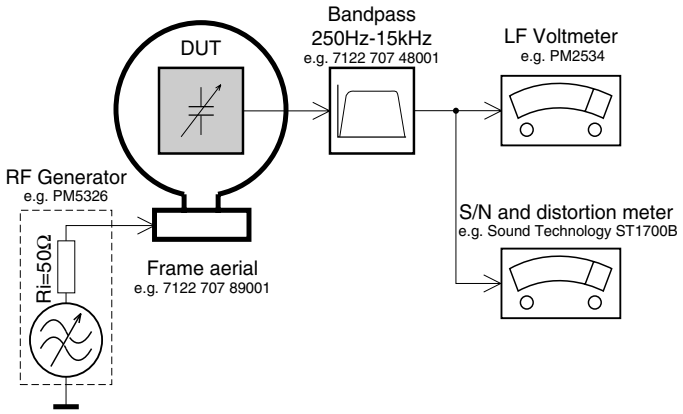
MEASUREMENT SETUP

Tuner FM



Use a bandpass filter to eliminate hum (50Hz, 100Hz) and disturbance from the pilottone (19kHz, 38kHz).

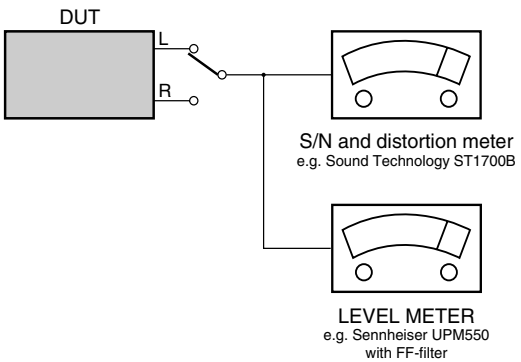
Tuner AM (MW,LW)



To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday´s cage.
Use a bandpass filter (or at least a high pass filter with 250Hz) to eliminate hum (50Hz, 100Hz).

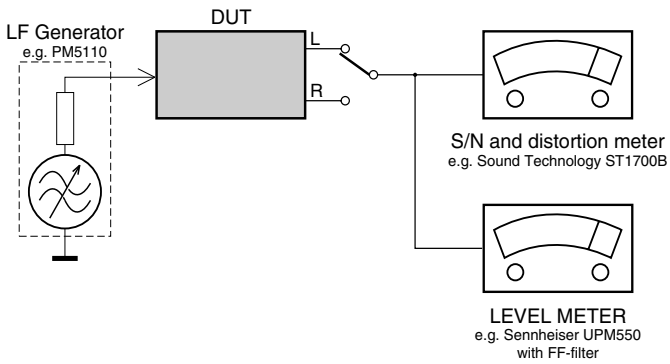
CD

Use Audio Signal Disc SBC429 4822 397 30184
(replaces test disc 3)



Recorder

Use Universal Test Cassette **CrO2** SBC419 4822 397 30069
or Universal Test Cassette **Fe** SBC420 4822 397 30071



SERVICE AIDS

Service Tools:

Universal Torx driver holder 4822 395 91019
Torx bit T10 150mm 4822 395 50456
Torx driver set T6 - T20 ..... 4822 395 50145
Torx driver T10 extended 4822 395 50423

Cassette:

SBC419 Test cassette CrO2 ..... 4822 397 30069
SBC420 Test cassette Fe 4822 397 30071
MTT150 Dolby level 200nWb/M 4822 397 30271

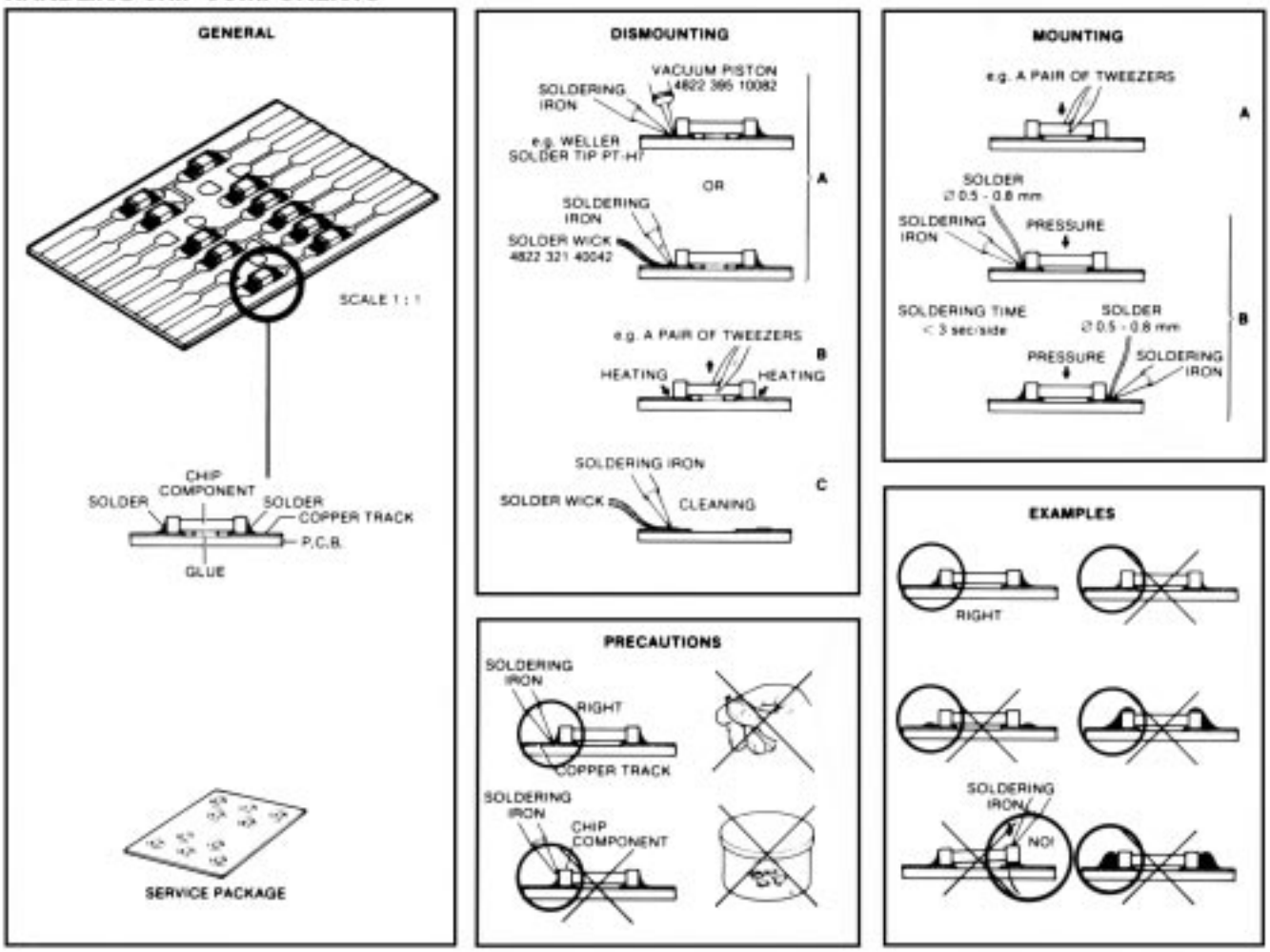
Compact Disc:

SBC426/426A Test disc 5 + 5A 4822 397 30096
SBC442 Audio Burn-in Test disc 1kHz 4822 397 30155
SBC429 Audio Signals disc 4822 397 30184
Dolby Pro-logic Test Disc 4822 395 10216

ESD Equipment:

Anti-static table mat - large 1200x650x1.25mm ... 4822 466 10953
Anti-static table mat - small 600x650x1.25mm 4822 466 10958
Anti-static wristband 4822 395 10223
Connector box (1MΩ) 4822 320 11307
Extension cable
(to connect wristband to conn. box) 4822 320 11305
Connecting cable
(to connect table mat to conn. box) 4822 320 11306
Earth cable (to connect product to mat or box) 4822 320 11308
Complete kit ESD3
(combining all above products) 4822 320 10671
Wristband tester 4822 344 13999

HANDLING CHIP COMPONENTS



ESD

GB WARNING

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools also at this potential.

F ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD).
Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.
Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité.
Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

D WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kan die Lebensdauer drastisch reduzieren.
Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes.
Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

NL WAARSCHUWING

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen.
Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

I AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione.
Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

GB

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified, be used.

NL

Veiligheidsbepalingen vereisen, dat het apparaat bij reparatie in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.

F

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utiliséés les piéces de rechange identiques à celles spécifiées.

D

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Original zustand des Geräts darf nicht verändert werden; für Reparaturen sind Original-Ersatzteile zu verwenden.

I

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati.

"After servicing and before returning set to customer perform a leakage current measurement test from all exposed metal parts to earth ground to assure no shock hazard exist. The leakage current must not exceed 0.5mA."

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

GB Warning !

Invisible laser radiation when open.
Avoid direct exposure to beam.

S Varning !

Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

SF Varoitus !

Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen!

DK Advarse !

Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsaettelse for stråling.

7 GENERAL INFORMATION

General Information

- ***The typeplate (which contains the serial number) is located at the rear of the system.***
- ***Recording is permissible if copyright or other rights of third parties are not infringed.***
- ***This device complies with the Federal Communications Commission (FCC) rules, part 15 and with 21 CFR 1040.10. Operation is subject to the following two conditions:***
  - ***This device may not cause harmful interference, and***
  - ***This device must accept any interference received, including interference that may cause undesired operation.***

Environmental Information

All unnecessary packaging has been omitted. We have tried to make the packaging easy to separate into three materials: cardboard (box), polystyrene foam (buffer) and polyethylene (bags, protective foam sheet).

Your system consists of materials which can be recycled and reused if disassembled by a specialized company. Please observe the local regulations regarding the disposal of packaging materials, exhausted batteries and old equipment.

Accessories *(Supplied)*

- Remote control
- Batteries (two AA size) for remote control
- AM loop antenna
- FM wire antenna
- AC power cord
- SS39 Surround Speakers *(for model FWC3 & C35 only)*

SAFETY INFORMATION

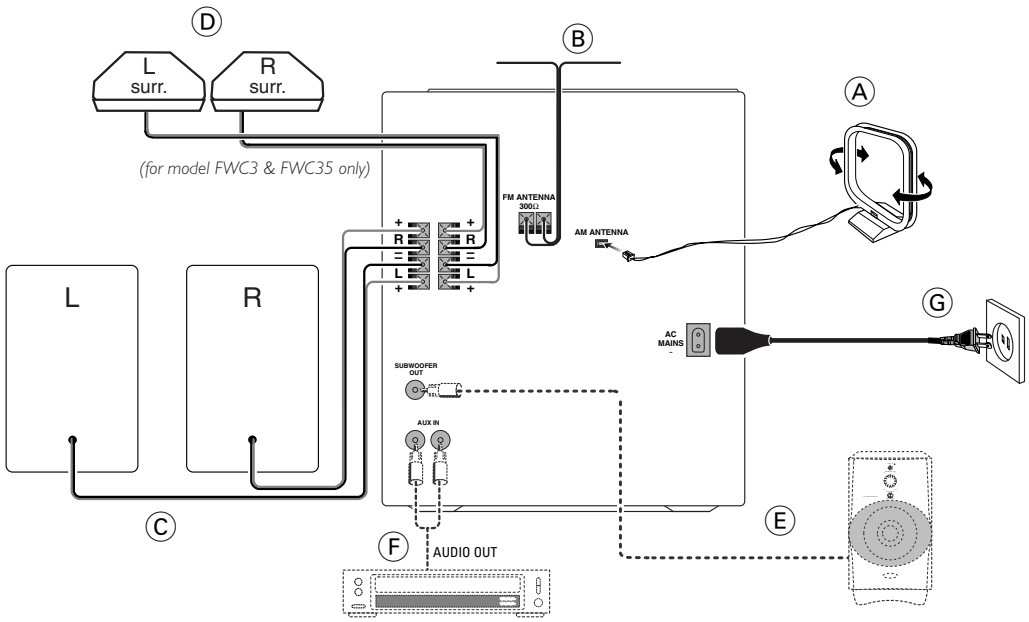
Safety Information

- Before operating the system, check that the operating voltage indicated on the typeplate (or the voltage indication beside the voltage selector) of your system is identical with the voltage of your local power supply. If not, please consult your dealer. The typeplate is located at the rear of your system.
- When the system is switched on, do not move it around.
- Place the system on a solid base (e.g. a cabinet).
- Place the system in a location with adequate ventilation to prevent internal heat build-up in your system. Allow at least 10cm (4 inches) clearance from the rear and the top of the unit and 5cm (2 inches) from each side.
- Do not expose the system to excessive moisture, rain, sand or heat sources.
- Under no circumstances should you repair the system yourself, as this will invalidate the warranty!
- If the system is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense on the lens of the CD unit inside the system. Should this occur, the CD player will not operate normally. Leave the power on for about one hour with no disc in the system until normal playback is possible.
- Electrostatic discharge may cause unexpected problems. See whether these problems disappear if you unplug the AC power cord and plug it in again after a few seconds.
- **To disconnect the system from the power supply completely, remove the AC power plug from the wall socket.**

CLASS 1
LASER PRODUCT

8 PREPARATION

Rear Connections



9 PREPARATION

Ⓐ AM Loop Antenna Connection

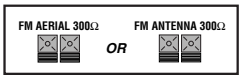
Connect the supplied loop antenna to the AM ANTENNA terminal. Place the AM loop antenna far away from the system and adjust its position for the best reception.

Ⓑ FM Wire Antenna Connection

Connect the supplied FM wire antenna to the FM AERIAL (FM ANTENNA) 300 Ω terminal. Adjust the position of the FM antenna for the best reception.

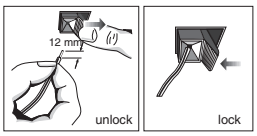
Outdoor Antenna

For better FM stereo reception, connect an outdoor FM antenna to the FM AERIAL (FM ANTENNA) 300 Ω terminal using a 300 Ω dipole wire.



Ⓒ Speakers Connection

- Connect the right speaker to Front terminal R, with the colored wire to + and the black wire to −.
- Connect the left speaker to Front terminal L, with the colored wire to + and the black wire to −.
- Clip the stripped portion of the speaker wire as shown.



Ⓓ Rear Surround Speakers' Connection

(for models FWC3 & FWC35 only)

Connect the black (non-marked) wires to the black REAR SURROUND terminals and the colored (marked) wires to the grey REAR SURROUND terminals.

Ⓔ Subwoofer Out Connection

Connect the optional active subwoofer to the SUBWOOFER OUT terminal. The subwoofer reproduces just the low bass sound effect (e.g. explosions, the rumble of spaceships, etc.). Be sure to follow the instructions supplied with the subwoofer.

Ⓕ Connecting other equipment to your system

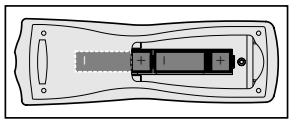
You can connect the audio left and right OUT terminals of a TV, VCR, Laser Disc player, DVD player or CD Recorder to the AUX IN terminals at the rear of the system.

Ⓖ AC Power Supply

After all other connections have been made, connect the AC power cord to the system and to the wall outlet.

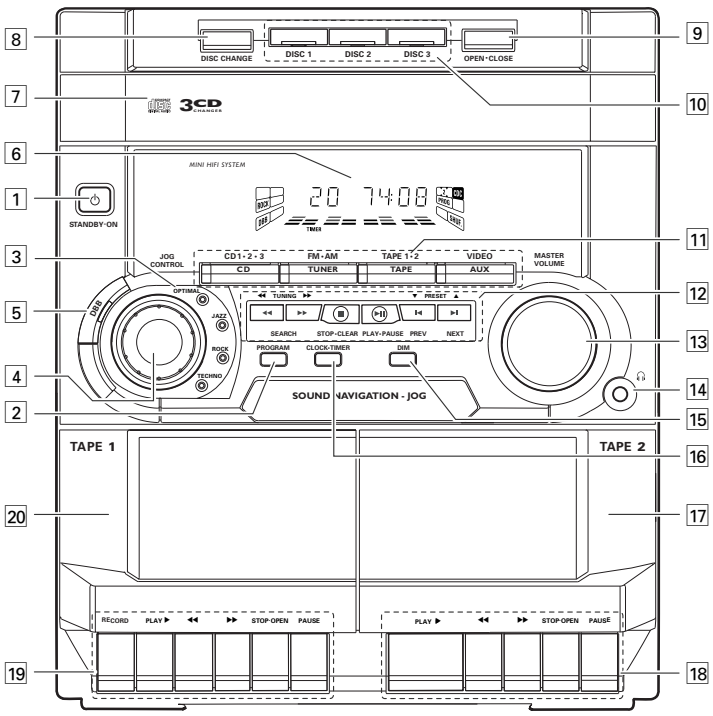
Inserting batteries into the Remote Control

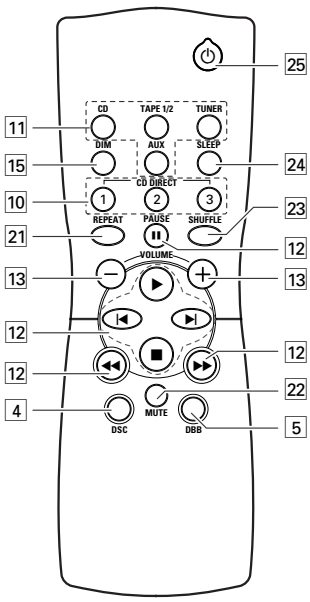
- Insert the batteries (Type R06 or AA) into the remote control as shown in the battery compartment.



- To avoid damage from possible battery leakage, remove dead batteries or batteries that will not be used for a long time. For replacement, use type R06 or AA batteries.

10 CONTROLS





11 CONTROLS

Controls on the system and remote control

1 STANDBY ON
– to switch the system on or to standby mode.
– to use for EASY SET.

2 PROGRAM
for CD ..... to program CD tracks.
for TUNER ... to program preset radio stations.
for CLOCK .. to select 12- or 24-hour in clock setting mode.

3 DIGITAL SOUND CONTROL DISPLAY PANEL
– to view the desired DSC display.

4 JOG CONTROL/DSC
– to select the desired equalizer display: OPTIMAL, JAZZ, ROCK or TECHNO.

5 DBB (DYNAMIC BASS BOOST)
– to switch on bass boost to enhance bass response or to switch off bass boost.

6 DISPLAY SCREEN
– to view the current setting of the system.

7 CD CAROUSEL TRAY

8 DISC CHANGE
– to change CD(s).

9 OPEN•CLOSE
– to open or close the CD carousel tray.

10 DISC 1 / DISC 2 / DISC 3 (CD DIRECT PLAY)
– to select a CD tray for playback.

11 SOURCE – to select the following:
CD / (CD 1•2•3)
– to select CD mode. When CD playback is stopped, press to select disc tray 1, 2 or 3.
TUNER / (FM•AM)
– to select Tuner mode. When in tuner mode, press to select the waveband: FM or AM.
TAPE / (TAPE 1• 2)
– to select Tape mode.
AUX / (VIDEO)
– to select sound from an external source (e.g. TV, VCR, Laser Disc player, DVD player or CD Recorder).

12 MODE SELECTION SEARCH ◀◀ ▶▶ (TUNING ◀◀ ▶▶)
for CD ..... to search backward/ forward.
for TUNER .... to tune to a lower or higher radio frequency.
for CLOCK .. to set the hour *(on the system only)*.
STOP•CLEAR ■
for CD ..... to stop CD playback or to clear a program.
for TUNER ... to stop programming.
for DEMO .... *(on the system only)* to start or stop demonstration mode.
PLAY ▶ / PAUSE ❚❚
for CD ..... to start or interrupt playback.
PREV ⏮ / NEXT ⏭(PRESET ▼▲)
for CD ..... to skip to the beginning of the current, previous, or next track.
for TUNER ... to select a preset station in memory.
for CLOCK .. to set the minute *(on the system only)*.

13 MASTER VOLUME
– to increase or decrease the volume.

14 🎧
– to connect headphones.

15 DIM
– to select different brightness for the display screen : DIM 1, DIM 2, DIM 3 or DIM OFF.

16 CLOCK•TIMER
– to view the clock, set the clock or set the timer.

17 TAPE DECK 2

18 TAPE DECK 2 OPERATION
PLAY ▶ ..... to start playback.
◀◀ ..... to rewind the tape.
▶▶ ..... to fast forward the tape.
STOP•OPEN…to stop playback or to open the tape door.
PAUSE ..... to interrupt playback.

19 TAPE DECK 1 OPERATION
RECORD ... to start recording.
PLAY ▶ ..... to start playback.
◀◀ ..... to rewind the tape.
▶▶ ..... to fast forward the tape.
STOP•OPEN…to stop playback/ recording or to open the tape door.
PAUSE ..... to interrupt playback or recording.

20 TAPE DECK 1

21 REPEAT
– to repeat a CD track, a disc, or all available discs.

22 MUTE
– to switch off the sound temporarily.

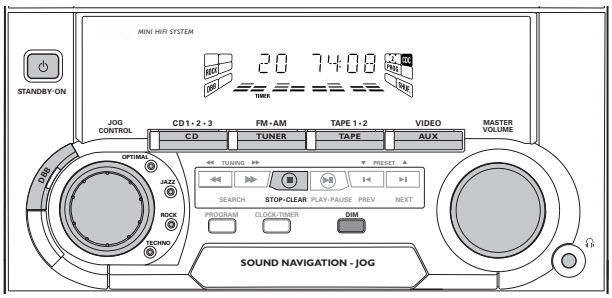
23 SHUFFLE
– to play all the available discs and their tracks in random order.

24 SLEEP
– to switch the system to standby mode at a selected time.

25 ⏻
– to switch the system to standby mode.

Notes for remote control:
– First select the source you wish to control by pressing one of the source select keys on the remote control (e.g. CD ,TUNER etc.).
– Then select the desired function (▶, ⏮, ⏭, etc.).

12 OPERATING THE SYSTEM



Important:
Before you operate the system, complete the preparation procedures.

Demonstration mode

The system has a demonstration mode that shows the various features offered by the system. ***When the system is switched on for the first time, the demonstration mode will start automatically.***

Notes:
– *During the demonstration, if you press any source (or standby-on) button, the system will switch to the respective mode (or standby).*
– *When the system is switched to standby mode, the demonstration will resume five seconds later.*

To stop the demonstration mode
• Press and hold ■ *(on the system only)* for ***five seconds*** when the system is in demonstration mode.
→ The demonstration will stop.
→ "DEMO OFF" is displayed.
→ The system will switch to standby mode.

Note:
– *Even though the AC power cord is removed from and reconnected to the wall socket, the demonstration will remain off until it is switched on again.*

To start the demonstration mode
• Press and hold ■ *(on the system only)* for ***five seconds*** when the system is in standby mode.
→ The demonstration will begin.

Easy Set

EASY SET allows you to store all available radio stations automatically.

• Press and hold **STANDBY ON** *(on the system only)* for ***five seconds*** when the system is in standby or demonstration mode.
→ "EASY SET" will be displayed, and followed by "TUNER" and then "AUTO".
→ EASY SET will start searching for all radio on FM band and then followed by radio stations on AM band.
→ All available radio stations with sufficient signal strength will be stored. Up to 40 presets may be stored.

Notes:
– *EASY SET will start with the FM band, if there are still presets available, the system will continue to store the AM band.*
– *When EASY SET is used, all previously stored radio stations will be replaced.*
– *The last preset radio station will appear on the display when EASY SET is completed.*

Switching the system ON

• Press **CD**, **TUNER**, **TAPE** or **AUX**.

You can also switch on the system by pressing any one of the CD DIRECT PLAY buttons.

Switching the system to standby mode

• Press **STANDBY ON** or ⏻ on the remote control.
→ The system will switch to standby mode.

Selecting the Source

• Press the respective source selection button: **CD**, **TUNER**, **TAPE** or **AUX**.
→ The display indicates the selected source.

Note:
– *For an external source, make sure you have connected the audio left and right OUT terminals of the external equipment (TV, VCR, Laser Disc player, DVD player or CD Recorder) to the AUX IN terminals.*

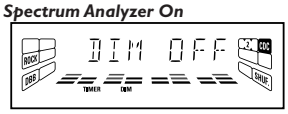
13 OPERATING THE SYSTEM

DIM mode

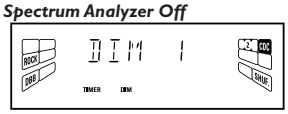
You can select the desired brightness for the display.

- Press **DIM** to select DIM 1, DIM 2, DIM 3 or DIM OFF display mode.
  → The **DIM** display lights up.
  → "DIM 1", "DIM 2", "DIM 3" or "DIM OFF" will be displayed depending on the mode selected.

DIM OFF - normal brightness with Spectrum Analyzer On

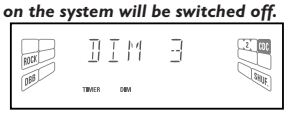


DIM 1 - normal brightness with Spectrum Analyzer Off



DIM 2 - half brightness with Spectrum Analyzer On

DIM 3 - half brightness with Spectrum Analyzer Off and all LEDs on the system will be switched off.



Sound Control

VOLUME ADJUSTMENT

Adjust **MASTER VOLUME** to increase or decrease the sound level.

For Personal Listening

Connect the headphones plug to the 🎧 socket at the front of the system. The speakers will be muted.

DIGITAL SOUND CONTROL (DSC)

The DSC feature enables you to enjoy special sound effects that have preset equalizer settings, providing the best music reproduction.

- Adjust **JOG CONTROL** to select OPTIMAL, JAZZ, ROCK or TECHNO.
  → The Digital Sound Control display panel will light up respectively.
  → "OPTIMAL", JAZZ, ROCK or TECHNO" and the respective flag will be displayed.

Note:

– *When "OPTIMAL" sound is selected, DBB will be switched on automatically.*

DYNAMIC BASS BOOST (DBB)

The DBB mode enhances the bass response.

- Press **DBB** to switch on bass response.
  → The DBB button lights up.
  → "DBB ON" and the **DBB** flag will be displayed.

To switch off DBB

- Press **DBB** again.
  → The DBB button light is switched off.
  → "DBB OFF" will be displayed.

Note:

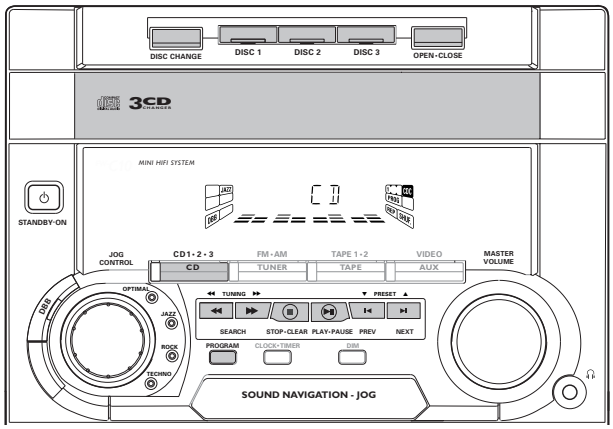
– *Some CDs or tapes might be recorded in high modulation, which causes a distortion at high volume. If this occurs, switch off DBB or reduce the volume.*

MUTE *(only on remote control)*

This feature allows you to temporarily switch off the sound of the system without switching off the system when you require a moment of silence.

- Press **MUTE** on the remote control to switch off the sound.
  → "MUTE" and the **MUTE** flag will be displayed.
- Press **MUTE** again on the remote control or increase the **MASTER VOLUME** to switch on the sound.

14 CD



Warning!

1) This system is designed for conventional CDs. Do not use any accessories such as disc stabilizer rings or CD treatment sheets, etc., which may damage the CD mechanism.

2) Do not load more than one disc into each tray.

3) When the CD changer is loaded with CDs, do not turn over or shake the system. This may jam the changer.

You may load three discs in the CD changer for continuous playback without interruption.

Discs for playback

This system can play all digital audio CD, finalized digital audio CD-Recordable and finalized digital audio CD-Rewritable format discs.

COMPACT disc DIGITAL AUDIO
COMPACT disc DIGITAL AUDIO Recordable
COMPACT disc DIGITAL AUDIO ReWritable

Loading the CD Changer

1 Press **CD** to select CD mode.
2 Press **OPEN•CLOSE**.
→ The CD carousel tray slides out.
3 Load a CD with the printed side up in the right tray.
- You can load another disc in the left tray.
- To load the third disc, press the **DISC CHANGE** button.
  → The CD carousel tray will rotate until the empty tray is ready for loading.

4 Press **OPEN•CLOSE** to close the CD carousel tray.
→ The total number of tracks and the playing time of the selected disc appear on the display.

Note:

– *To ensure good system performance, wait until the CD changer completely reads the disc(s) before proceeding.*

CD Direct Play

- You can play a CD directly by pressing the **DISC 1**, **DISC 2** or **DISC 3** button. The CD player will stop at the end of playback of the selected disc.
  → A lit button indicates that a disc is loaded in the disc tray.
  → A flashing button indicates that a disc is playing.

Playing a CD

1 Press ▶ to start playback.
→ The disc tray, track number and elapsed playing time of the current track appear on the display.
- To interrupt playback, press ❚❚.
  → The playing time flashes.
- To resume playback, press ▶ again.

2 To stop playback, press ■.

Note:

– *All the available discs will play once, then stop.*

Disc Change

You can change the outer two discs while the third inner disc is stopped or is playing.

1 Press **DISC CHANGE**.
→ The CD carousel tray slides out.
2 Replace the discs in the left and right disc trays.

15

CD

- If you press **DISC CHANGE** again during playback, the CD will stop playing.
  → The CD carousel tray will rotate until the inner tray is rotated out and is ready for changing.

3 Press **OPEN•CLOSE** to close the CD carousel tray.

Selecting a desired track

Selecting a desired track when playback is stopped

1 Press ⏮ or ⏭ until the desired track appears on the display.
2 Press ▶ to start playback.
→ The selected track number and elapsed playing time appear on the display.

Selecting a desired track during playback

- Press ⏮ or ⏭ until the desired track appears on the display.
  → The selected track number and elapsed playing time appear on the display.
- If you press ⏮ once it will skip to the beginning of the current track and play the track again.

Note:
– *Pressing ⏮ during shuffling can only skip to the beginning of the current track.*

Searching for a particular passage during playback

- Press and hold ◀◀ or ▶▶ until the desired passage is located.
  → The volume will be reduced.
- Play returns to normal when ◀◀ or ▶▶ is released.

Programming Tracks

Programming tracks of a loaded CD is possible when playback is stopped. The display will indicate the total tracks stored in the program. Up to 40 tracks can be stored in the memory in any order. When 40 tracks are stored and you attempt to store another track, the display will show "PROGRAM FULL".

1 Load the desired discs in the disc trays.
2 Press **PROGRAM** to start programming.
→ The **PROG** flag starts flashing.
→ It will cancel any previously selected repeat mode.
3 Press the **CD** (CD **1•2•3**) or **DISC 1/2/3** button to select the disc.
4 Press ⏮ or ⏭ to select the desired track.
5 Press **PROGRAM** to store the track.
- Repeat steps ***3*** to ***5*** to store other discs and tracks.

6 Press ■ once to end programming.
→ The total number of tracks programmed and total playing time appear on the display.

Notes:
– *If the total playing time is more than "99:59" or if one of the programmed tracks has a number greater than 30, then "--:--" appears on the display instead of the total playing time.*
– *If the system is reading the discs, programming is not possible, "READING" will be displayed and followed by "DISC x". "x" is the current read disc number.*
– *During programming, if no button is pressed within 20 seconds, the system will exit program mode automatically.*

Reviewing the program

Reviewing of the program is possible only when playback is stopped.

- Press ⏮ or ⏭ repeatedly to review the programmed tracks.
- Press ■ to exit review mode.

Playing the program

1 Press ▶ to start program playback.
→ "PLAY PROGRAM" will be displayed.
→ The track number and elapsed playing time of the current track will appear on the display.

- If you press **REPEAT** during program playback, the current track or all programmed tracks will be played repeatedly.
  → "TRACK" or "PROGRAM" will be displayed.
  → The **REP** and **PROG** flags appear on the display.

2 Press ■ to stop program playback.

Notes:
– *If you press any of the CD DIRECT PLAY buttons, the system will play the selected disc or track and the stored program will be ignored temporarily. The PROG display also will disappear temporarily from the display. It will reappear when playback of the selected disc ends.*
– *REPEAT DISC mode will be cancelled when program playback begins.*

Erasing the program *(when playback is stopped)*

- Press ■.
  → "PROGRAM CLEARED" will be displayed.

Note:
– *The program will be erased when the system is disconnected from the power supply or when the CD carousel tray is opened.*

16

CD

Shuffle *(only on remote control)*

In shuffle mode, the system plays all the available discs and their tracks in random order. Shuffle may be used also when tracks are programmed.

To shuffle all the discs and tracks

1 Press **SHUFFLE**.
→ "SHUFFLE" will be displayed.
→ The **SHUF** flag, the disc and the track selected at random appear on the display.
- The discs and the tracks will be played in random order until you press ■.
- If you press **REPEAT** during shuffling, the current track or all available discs will be played repeatedly.
  → "TRACK" or "ALL DISC" will be displayed.
  → The **REP.** and **SHUF.** flags appear on the display.

2 Press **SHUFFLE** again to resume normal playback.
→ The **SHUF** flag disappears from the display.

Note:
– *REPEAT DISC mode will be cancelled when shuffle is selected.*

Repeat *(only on remote control)*

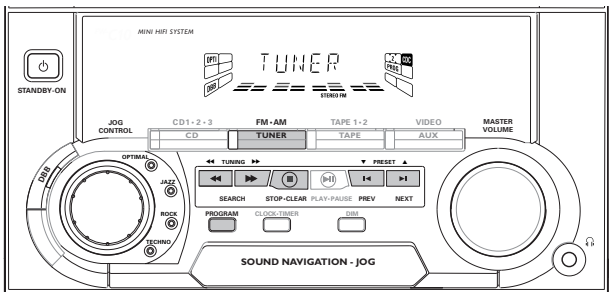
You can play the current track, a disc or all available discs repeatedly.

1 Press **REPEAT** on the remote control to select the various repeat modes.
→ "TRACK", "DISC", "ALL DISC" or "OFF" will be displayed.
→ The **REP** flag appears on the display.
- The selected track, selected disc or all available discs will now be played repeatedly until you press ■.

2 Press **REPEAT** until the "OFF" mode is displayed to resume normal playback.
→ The **REP** flag disappears from the display.

Notes:
– *REPEAT DISC mode is not available during program play or shuffle mode.*
– *You can also repeat shuffling a program.*
→ "TRACK" or "PROGRAM" will be displayed.
→ *The **REP**, **PROG**, and **SHUF** flags appear on the display.*

TUNER



Note:
– *For 'EASY SET' feature, please refer to page 12.*

Tuning to radio stations

1 Press **TUNER** (FM•AM) to select TUNER mode.
→ "TUNER" will be displayed.
A few seconds later, the current radio frequency will be displayed.
2 Press **TUNER** (FM•AM) again to select the desired waveband : FM or AM.
3 Press ◀◀ or ▶▶ for more than one second, then release.
→ The display will show "SEARCH" until a radio station with sufficient signal strength is found.

- Repeat this procedure until the desired station is reached.
- To tune to a weak station, briefly press ◀◀ or ▶▶ repeatedly until the display shows the desired frequency and/or when the best reception has been obtained.

17 TUNER

Storing Preset Stations

You can store up to 40 radio stations in the memory. When a preset radio station is selected, the preset number appears next to the frequency on the display.

Automatic programming

1 Press **TUNER** (FM•AM).
2 Press **PROGRAM** for more than one second.
→ The **PROG** flag starts flashing and "AUTO" will be displayed.
→ The system will search for every available station in the FM waveband first, then search the AM waveband.
→ All available stations will be stored automatically. The frequency and preset number will be displayed briefly.
→ The system will stop searching when all the available radio stations are stored or when the memory for 40 preset radio stations is used.
→ The system will remain tuned to the last stored preset radio station.

Notes:
– *You can cancel the automatic programming by pressing PROGRAM or ■ (on the system only).*
– *If you want to reserve a section of preset numbers, for example preset numbers 1 to 9, select preset 10 before starting automatic programming, only the preset numbers 10 to 40 will be programmed.*

Manual programming

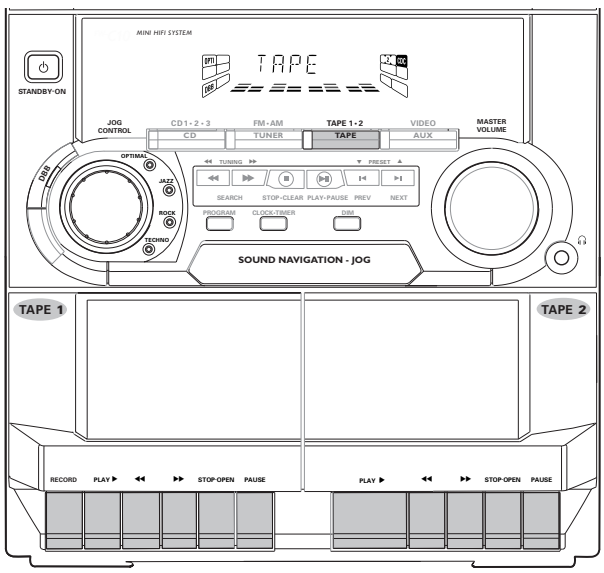
1 Press **TUNER** (FM•AM).
2 Press **TUNER** (FM•AM) again to select the desired waveband : FM or AM.
3 Press **PROGRAM** for less than one second.
→ The **PROG** flag starts flashing.
→ The next available preset number will be displayed for selection.
4 Press ◀◀ or ▶▶ to tune to the desired frequency.
• If you wish to store the radio station to another preset number, press ▼ or ▲ to select the desired preset number.
5 Press **PROGRAM** again.
→ The **PROG** flag disappears and the radio station will be stored.
• Repeat ***steps 3 – 5*** to store other preset radio stations.

Notes:
– *When 40 radio stations are stored and you attempt to store another radio station, the display will show "PROGRAM FULL". If you want to change an existing preset number, repeat steps 3 – 5.*
– *You can cancel manual programming by pressing ■ (on the system only).*
– *During programming, if no button is pressed within 20 seconds, the system will exit program mode automatically.*

Tuning to Preset Radio Stations

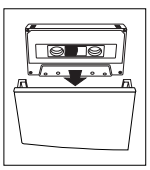
• Press ▼ or ▲ to select the desired preset number.
→ The preset number, radio frequency, and waveband appear on the display.

18 TAPE



Loading a tape

1 Press **STOP•OPEN**.
2 The tape deck door opens.
3 Load the tape with the open side downward and the full spool to the left.



4 Close the tape deck door.

Tape Playback

1 Press **TAPE** to select TAPE mode.
→ "TAPE" will be displayed.
2 Load the tape into the selected tape deck.
3 Press **PLAY** ▶ to start playback.
• To interrupt playback, press **PAUSE**.
• To resume playback, press **PAUSE** again.
4 Press **STOP•OPEN** to end playback.

Rewind/Fast Forward

When playback is stopped

1 You can rewind or fast forward a tape by pressing ◀◀ or ▶▶, respectively.
→ The tape will stop automatically at the end of rewinding or fast forwarding.
2 Press **STOP•OPEN** to stop rewinding or fast forwarding.

Continuous Playback From Tape Deck 2 to Tape Deck 1

1 Press **TAPE** to select TAPE mode.
2 Load the tapes in tape decks 1 and 2.
3 Press **PLAY** ▶ on tape deck 2.
4 Press **PAUSE** on tape deck 1.
5 Press **PLAY** ▶ on tape deck 1.
→ Playback will begin with tape deck 2 and will continue with tape deck 1 when playback on tape deck 2 ends.
6 Press **STOP•OPEN** if you want to stop playback before the end of the tape in tape deck 1 or tape deck 2.

Notes:
– *During rewinding or fast forwarding of a tape, it is also possible to listen to another source (e.g. CD, TUNER or AUX).*

19 TAPE

– *Before playing a tape, check and tighten slack tape with a pencil. Slack tape may get jammed or may burst in the mechanism.*
– *C-120 tape is extremely thin and is easily deformed or damaged. It is not recommended for use in this system.*
– *Store the tapes at room temperature and do not put them too close to a magnetic field (for example, a transformer, TV or speaker).*

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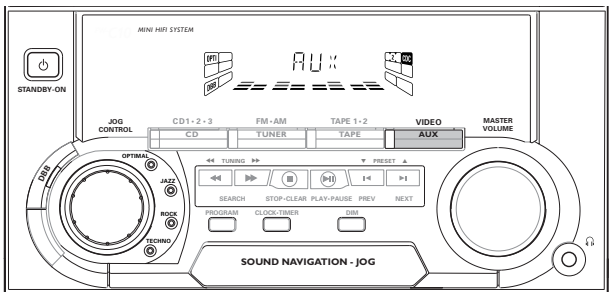
AUX



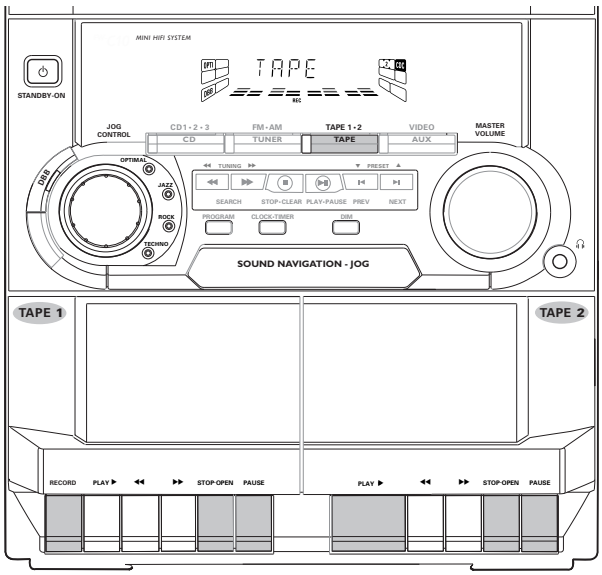
Selecting External Equipment

If you have connected the audio out terminals of the external equipment (TV, VCR, Laser Disc player, DVD player or CD Recorder) to the AUX IN terminals, you can hear the enhanced sound from the system.

• Press **AUX** to select the external equipment.
→ "AUX" will be displayed.

Note:
– *All the sound control features (e.g. DSC, DBB, etc.) are available for selection.*

20 RECORDING



Notes:
– *For recording, use only tape of IEC type I (normal tape).*
– *The tape is secured at both ends with leader tape. At the beginning and end of tape, nothing will be recorded for six to seven seconds.*
– *The recording level is set automatically, regardless of the position of Volume, DBB or DSC.*
– *To prevent accidental recording, break out the tab on the left shoulder of the tape side you want to protect.*

One Touch Recording

• For One Touch Recording, as soon as you press RECORD, the current source (CD, TUNER or AUX) will be recorded on tape deck 1.

1 Load a blank tape in tape deck 1.
2 Press **RECORD** on tape deck 1 to start recording.
→ The **REC** starts flashing.
3 Press **PAUSE** to interrupt recording.
4 Press **STOP•OPEN** on tape deck 1 to stop recording.

CD Synchro Start Recording

During CD synchro start recording,
• Do not fast forward/rewind your tape in tape deck 2.
• Do not listen to another source.

1 Load a blank tape into tape deck 1 and a disc into the disc tray.
2 Press **CD**.
• You can program the tracks in the order you want them to be recorded (see Programming Tracks). If you do not, the tracks are recorded according to the order on the selected disc.
3 Press **RECORD** on tape deck 1 to start recording.
→ The **REC** starts flashing.
4 Press **STOP•OPEN** on tape deck 1 to stop recording, then press ■ to stop CD playback.

Dubbing tapes *(from tape deck 2 to tape deck 1)*

1 Load the prerecorded tape into tape deck 2 and a blank tape into tape deck 1.
• Make sure both tapes have their full spool to the left.
2 Press **PAUSE** on tape deck 1.
3 Press **RECORD** on tape deck 1.
4 Press **PLAY ▶** on tape deck 2.
→ The **REC** starts flashing.

21 RECORDING

- Recording will start automatically.

5 Press **STOP•OPEN** on tape deck 1 and tape deck 2 to stop dubbing.

Notes:
– *At the end of side A, flip the tapes to side B and repeat the procedure.*
– *Dubbing of tapes is only possible from tape deck 2 to tape deck 1.*
– *To ensure good dubbing, use tapes of the same length.*

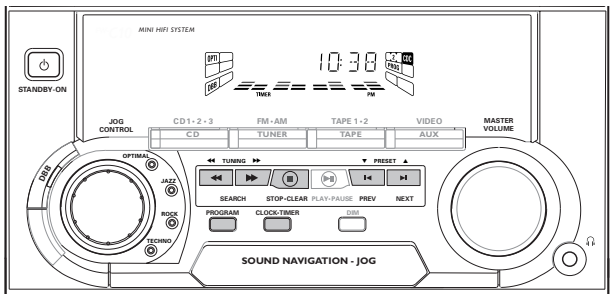
Recording from other sources *(only on tape deck 1)*

1 Load a blank tape into tape deck 1.
2 Press **CD**, **TUNER** or **AUX**.
- Start playback of the selected source.

3 Press **RECORD** on tape deck 1 to start recording.
→ The **REC** starts flashing.
4 Press **PAUSE** to interrupt recording.
5 Press **STOP•OPEN** on tape deck 1 to stop recording.

Note:
– *During recording, it is not possible to listen to another sound source.*

CLOCK



View Clock

You can view the clock (if it is set) if the system is in Standby mode or when any sound source is selected (CD, TUNER, etc.). The clock will be displayed for about seven seconds.

- Press **CLOCK•TIMER** briefly.
→ "10:38 **PM** or 22:38" (the current time in either 12- or 24-hour mode) will be displayed depending on whether you have selected 12- or 24-hour mode.
→ "--:--" will be displayed if the clock is not set.

Clock Setting

The clock can be set in either 12- or 24-hour mode, e.g. "12:00 **AM**" or "00:00". Before setting the clock, you must be in the View Clock mode.

1 Press **CLOCK•TIMER** to select clock mode.
2 Press **PROGRAM** to select 12- and 24- hour mode.
→ If 12-hour mode is selected, "12:00" starts flashing and the **AM** lights up.
→ If 24-hour mode is selected, "00:00" starts flashing.
3 Set the hour with ◀◀ or ▶▶ on the system.
4 Set the minute with ⏮ or ⏭ on the system.

22 TIMER

5 Press **CLOCK•TIMER** again to store the setting.
→ The clock starts.

- To exit without storing the setting, press ■ on the system.

Notes:
– *During clock setting, if no button is pressed within 90 seconds, the system will exit clock setting mode automatically.*
– *When a power interruption occurs, the clock setting is erased.*

Timer Setting

- The system can switch on to CD or TUNER mode automatically at a preset time. It can serve as an alarm to wake you up.
- Before setting the timer, make sure the clock is set correctly.
- The timer will always be switched on once it is set.
- **The volume of the timer will increase from the minimum level until the volume level before the set is switched to standby mode.**

1 Press and hold **CLOCK•TIMER** for more than ***two seconds*** to select timer mode.
→ "12:00 **AM**" or "00:00" or the last timer setting starts flashing depending on whether you have selected 12- or 24-hour mode.
→ The **TIMER** starts flashing.
→ The selected source is lit while other available sources are flashing.
2 Press **CD** or **TUNER** to select the desired source.
- Before selecting CD, make sure a CD is loaded in the CD carousel tray.

3 Press ◀◀ or ▶▶ on the system to set the hour for the timer to start on the system.
4 Press ⏮ or ⏭ on the system to set the minute for the timer to start.
5 Press **CLOCK•TIMER** to store the start time.
→ The timer is now set.
→ The **TIMER** remains on the display.
- At the preset time, the timer will be activated.
→ The selected source will be played.

Notes:
– *During timer setting, if no button is pressed within 90 seconds, the system will exit timer setting mode automatically.*
– *If the source selected is TUNER, the last tuned frequency will be switched on.*
– *If the source selected is CD, playback will begin with the first track of the selected disc or program. If the CD trays are empty, the TUNER will be selected instead.*
– *The timer will not activate if a recording is in progress.*

To switch off the TIMER
1 Press and hold **CLOCK•TIMER** for more than ***two seconds***.
2 Press ■ on the system to cancel the timer.
→ The timer is now switched off.
→ The display will show "CANCEL" and the **TIMER** disappears.

To start the TIMER again *(for the same preset time and source)*
1 Press and hold **CLOCK•TIMER** for more than ***two seconds***.
2 Press **CLOCK•TIMER** again to store the start time.
→ The timer is now on.
→ The **TIMER** appears on the display.

SLEEP TIMER

Sleep Timer *(only on remote control)*

This feature allows you to select a length of time after which the system will switch to the standby mode automatically.

1 Press **SLEEP** on the remote control repeatedly to select a period of time.
→ The selections are as follows (time in minutes):
60 → 45 → 30 → 15 → OFF → 60 …
→ "SLEEP xx" or "OFF" will be displayed. "xx" is the time in minutes.
2 When you reach the desired length of time, stop pressing the **SLEEP** button.
→ After this amount of time passes, the system will switch to the standby mode.

To switch off the Sleep Timer
- Press **SLEEP** repeatedly until "OFF" is displayed, or press the **STANDBY ON** button.

MAINTENANCE

Maintenance

Cleaning the Cabinet

- Use a soft cloth slightly moistened with a mild detergent solution. Do not use a solution containing alcohol, spirits, ammonia or abrasives.

Cleaning Discs

- When a disc becomes dirty, clean it with a cleaning cloth. Wipe the disc from the center out.
- Do not use solvents such as benzine, thinner, commercially available cleaners, or antistatic spray intended for analog records.

Cleaning the CD lens

- After prolonged use, dirt or dust may accumulate at the CD lens. To ensure good playback quality, clean the CD lens with Philips CD Lens Cleaner or any commercially available cleaner. Follow the instructions supplied with cleaner.

Cleaning the Heads and the Tape Paths

- To ensure good recording and playback quality, clean the heads, the capstan(s), and pressure roller(s) after every 50 hours of tape operation.
- Use a cotton swab slightly moistened with cleaning fluid or alcohol.
- You can also clean the heads by playing a cleaning tape once.

Demagnetizing the heads

- Use a demagnetizing tape available at your dealer.

TROUBLESHOOTING

Warning! Under no circumstances should you try to repair the set yourself as this will invalidate the guarantee. Do not open the set as there is a risk of electric shock.

- If a fault occurs, check the points listed below before taking the system for repair.
- Should any problems persist after you have made these checks, consult your nearest dealer or service center.

CD Player Operation

"NO DISC" is displayed.

- The disc is inserted upside down.
→ *Place CD with printed side up.*
- Moisture condensation at the lens.
→ *Wait until lens has adjusted to normal room temperature.*
- There is no disc in the CD tray.
→ *Insert a CD.*
- The CD is dirty, badly scratched or warped.
→ *Clean or replace the CD.*
- The CD lens is dirty or dusty.
→ *See section under Maintenance (page 24).*

"DISC NOT FINALIZED" is displayed.

- The CD-RW or CD-R disc is not properly recorded for use with a standard CD player.
→ *Read the instruction booklet of your CD-Rewritable or CD-Recorder on how to finalize a recording.*
- The CD is badly scratched or dirty.
→ *Replace or clean CD.*

Radio Reception

Poor radio reception.

- The signal is too weak.
→ *Adjust the antenna.*
→ *Connect an external antenna for better reception.*
- The TV or VCR is too close to the stereo system.
→ *Separate the stereo system from the TV or VCR.*

TROUBLESHOOTING

Tape Deck Operation

"RECORDING ACTIVE" is displayed.

- A recording is in progress.
→ *Stop the recording or wait until it is finished.*

Recording or playback cannot be made or there is a decrease in audio level.

- Dirty tape heads, capstans or pressure rollers.
→ *See section on tape deck maintenance (page 24).*
- Magnetic build-up in the record/playback head.
→ *Use demagnetizing tape.*

General

System does not react when any button is pressed.

- Electrostatic discharge.
→ *Press STANDBY ON to switch the system off. Remove the AC power plug from the wall outlet, then reconnect the power plug and switch on the system again.*

No or poor sound.

- Volume is not turned up.
→ *Adjust VOLUME.*
- The headphones are connected.
→ *Disconnect the headphones.*
- Speakers are not connected or are connected wrongly.
→ *Check that the speakers are connected correctly.*
→ *Make sure the stripped speaker wire is clamped.*

Reversed left and right sound.

- Speakers are connected wrongly.
→ *Check the speaker connections and location.*

Lack of bass sound or apparently imprecise physical location of musical instruments.

- Speakers are connected wrongly.
→ *Check the speaker connection for proper phasing, colored/black wires to colored/black terminals.*

Remote control has no effect on the system.

- Wrong source is selected.
→ *Select the source (CD, TUNER, etc.) before pressing the function button, (▶, ⏮, ⏭, etc.).*
- The distance to the system is too large.
→ *Reduce the distance.*
- Batteries are inserted incorrectly.
→ *Insert the batteries with their polarities (+/– signs) as indicated.*
- Batteries are exhausted.
→ *Replace the batteries.*

Timer is not working.

- Clock is not set.
→ *Set the clock.*
- Timer is not switched on.
→ *Press CLOCK•TIMER to switch on the timer.*
- Recording is in progress.
→ *Stop recording.*

Clock setting is erased.

- There was a power failure.
→ *Reset the clock.*

System displays features automatically; buttons flash continuously.

- Demonstration mode is switched on.
→ *Press and hold ■ (on the system) for five seconds to switch off the demonstration.*

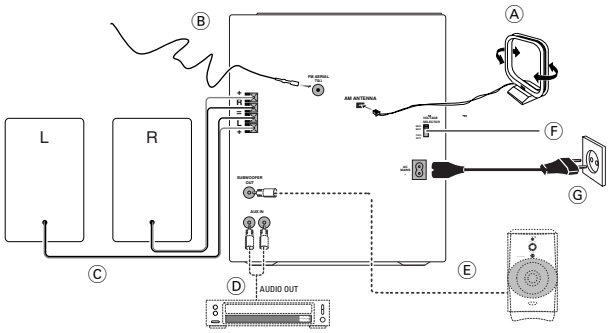
All lighted buttons are not lit.

- Display is switch on in DIM 3 mode.
→ *Press DIM until DIM OFF display mode is shown.*

ADDITIONAL FEATURES FOR FW-C30/21/21M

PREPARATION

Rear Connections

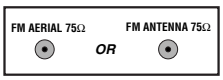


Ⓑ FM Wire Antenna Connection

Connect the supplied FM wire antenna to the FM AERIAL (FM ANTENNA) 75 Ω terminal. Adjust the position of the FM antenna for the best reception.

Outdoor Antenna

For better FM stereo reception, connect an outdoor FM antenna to the FM AERIAL (FM ANTENNA) 75 Ω terminal using a 75 Ω dipole wire.

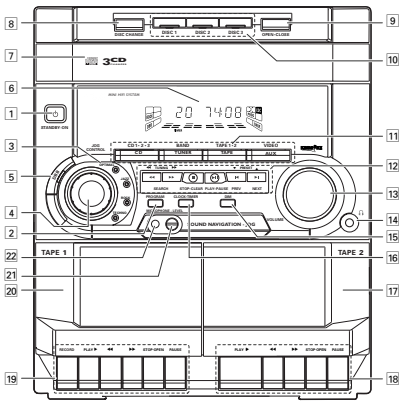


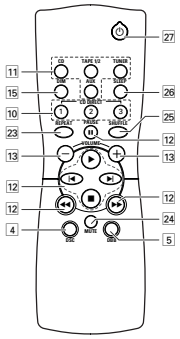
Ⓕ Adjusting the Operating Voltage

(not available for version /30)

Before connecting the AC power cord to the wall outlet, make sure that the voltage selector at the rear of the system is set to the local power line voltage. If not, reset the selector before connecting to the wall outlet.

CONTROLS





21 MIC LEVEL *(not available for version /30)*
– to adjust the mixing level for karaoke or microphone recording.

22 MIC *(not available for version /30)*
– to connect microphones jack.

MW TUNING GRID

Changing the MW tuning grid

(not available for version /30)

The frequency step can be changed if necessary. In North and South America, the frequency step between adjacent channels in the MW band is 10 kHz. In other parts of the world, it is 9 kHz. The frequency step preset in the factory is 9 KHz.

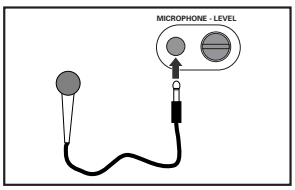
For MW Band
To change from 9 kHz to 10 kHz or vice versa

Changing of tuning grid will erase all previously stored preset stations.

1 Disconnect the system from the AC power supply *(pull out the AC power cord).*
2 Press and hold **TUNER** and **TUNING** ▶▶ while reconnecting the system to the AC power supply.
→ Display will show "GRID 10" or "GRID 9".

Notes:
– *GRID 9 indicates that the tuning grid is in step of 9 kHz in MW band. GRID 10 indicates that the tuning grid is in step of 10 kHz in MW band.*
– *FM tuning grid will also be changed from 50 kHz to 100 kHz or vice versa. All preset stations will also be erased.*

KARAOKE

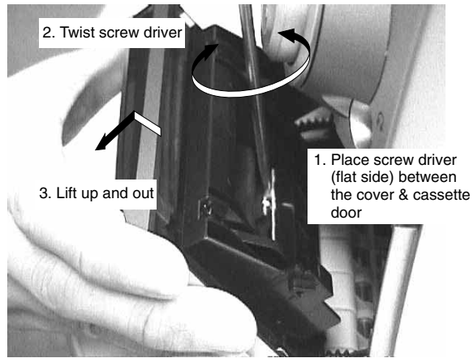


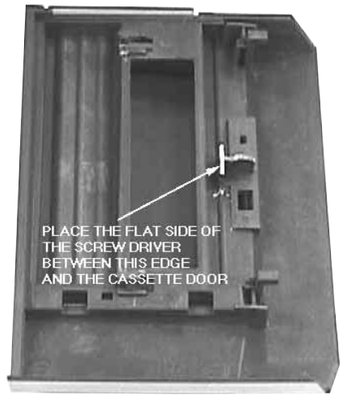
Microphone Mixing *(not available for version /30)*

1 Set the **MIC LEVEL** control to the minimum level to prevent acoustic feedback (e.g. a loud howling sound) before you connect the microphone.
2 Connect a microphone to the **MIC** socket.
3 Press **CD**, **TUNER**, **TAPE** or **AUX**.
4 Play the selected source.
5 Adjust the volume level with **VOLUME** control.
6 Adjust the **MIC LEVEL** control to the mixing level that you want.
7 Start singing or talking through the microphone.

DISMANTLING INSTRUCTIONS

Dismantling of the Cassette Cover

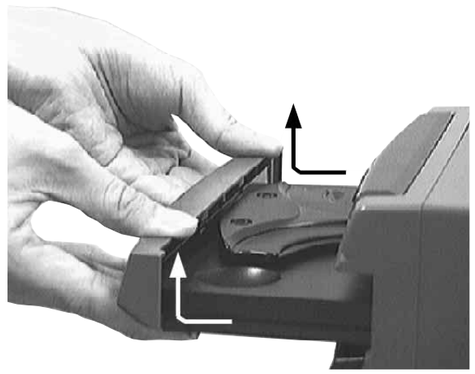




Cassette

Dismantling of the Front Panel

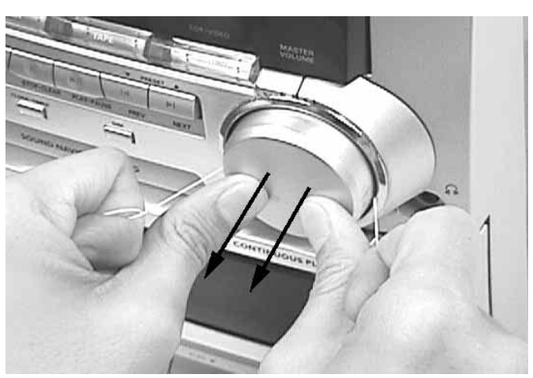
1) Slide out the tray an remove the Cover Tray CDC (pos 107) as indicated.
2) Loosen the 8 screws to separate the Front Panel from the rear portion.
   - 2 screws B on the front
   - 2 screws each on the left & right side
   - 2 screws at the bottom



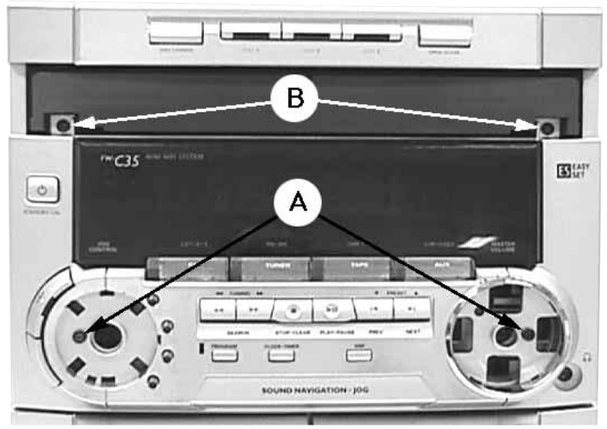
Dismantling of the Cover Control on the Front (see Notes)

1) Insert a strong string into the slot between the Volume knob (pos 146) and Cover Ring Volume (pos 1440, looped it 1,5 turns securely around the Volume knob and pulled it out as shown.
2) Do likewise for the Jog Rotary knob (pos 145).
3) Remove the 2 hidden screws A to take out the Cover Control Assembly (pos 153 + 143 + 144).

***Note**: Only the Lightguide DSC (pos 127) is sandwiched between the Front Cabinet (pos 101) & Cover Control (pos 153).*

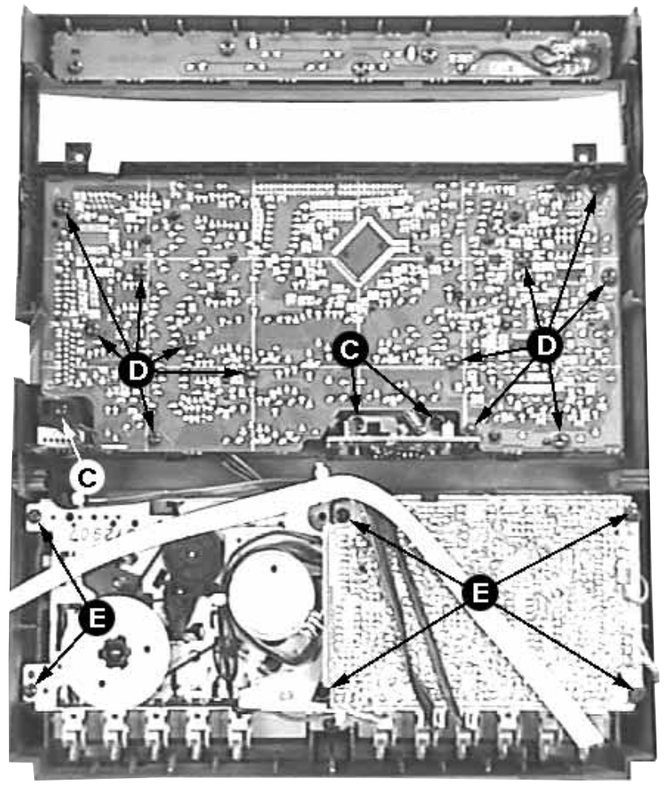


3-1



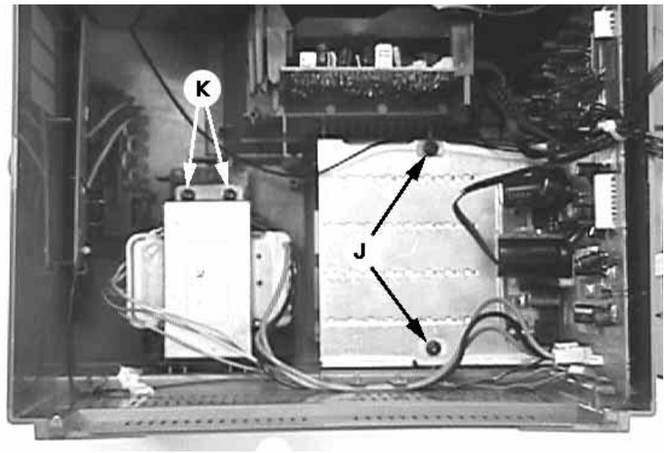
Dismantling of Assemblies on the Front Panel

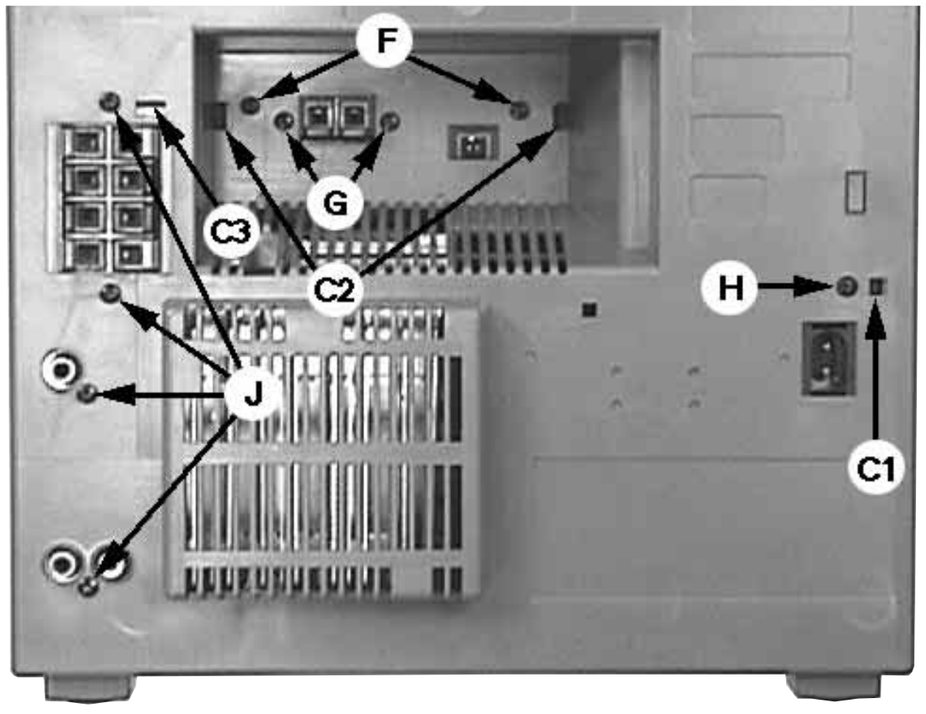
1) Remove the Volume and Jog Rotary knobs (pos 145 & 146) as per step 1 and 2 of ***Dismantling the Cover Control on the Front.***
2) Remove 3 screws C to loosen the Headphone board (1x) and the Karaoke board (2x).
   Note: Karaoke board is for some versions only.
3) Remove 12 screws D as indicated to loosen the Front board.
4) Remove 6 screws E to loosen the ECO-MTF Module



Dismantling of Rear Portion

1) Remove 1 screw H & uncatch C1 to loosen the Mains socket board.
2) Remove 2 screws F, 2 screws G and uncatch C2 to loosen the Tuner board assembly.
3) Remove 6 screws J (4x on the rear and 2x on the heatsink) and uncatch C3 to loosen the Combi board (Main part).
4) Remove 2 screws K to loosen the Mains Transformer.



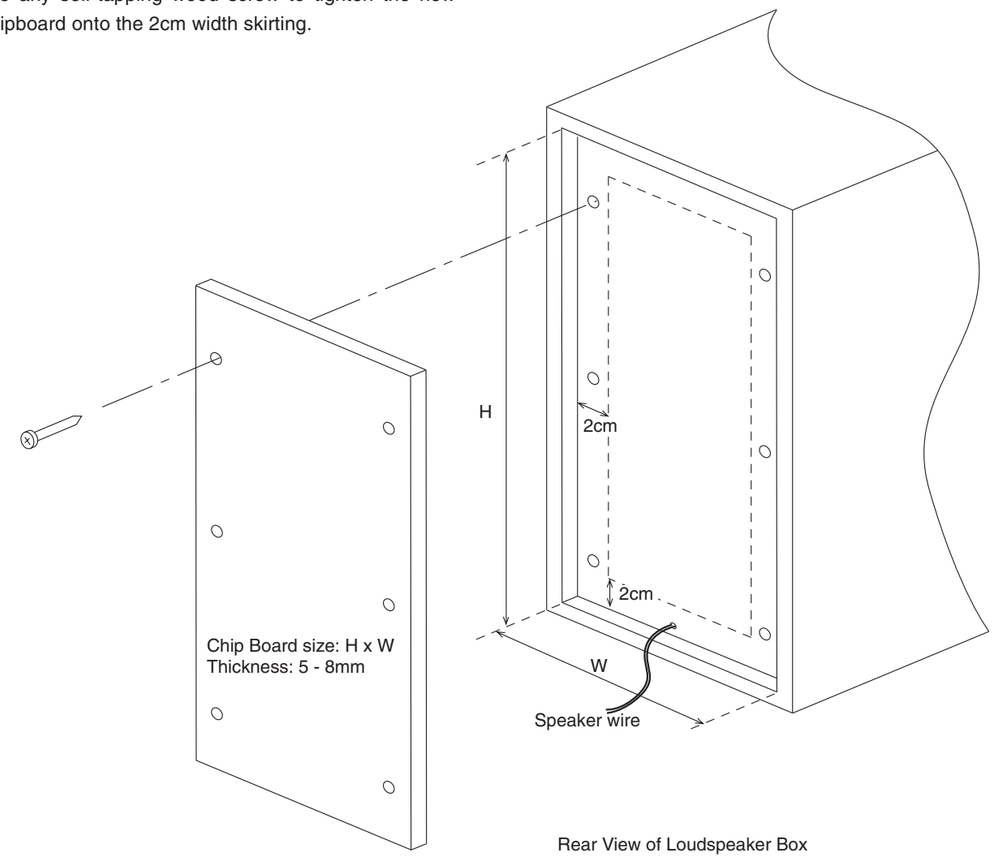


3-2

Dismantling of Left/Right Loudspeaker Box (not recommended because of high risk of damage)

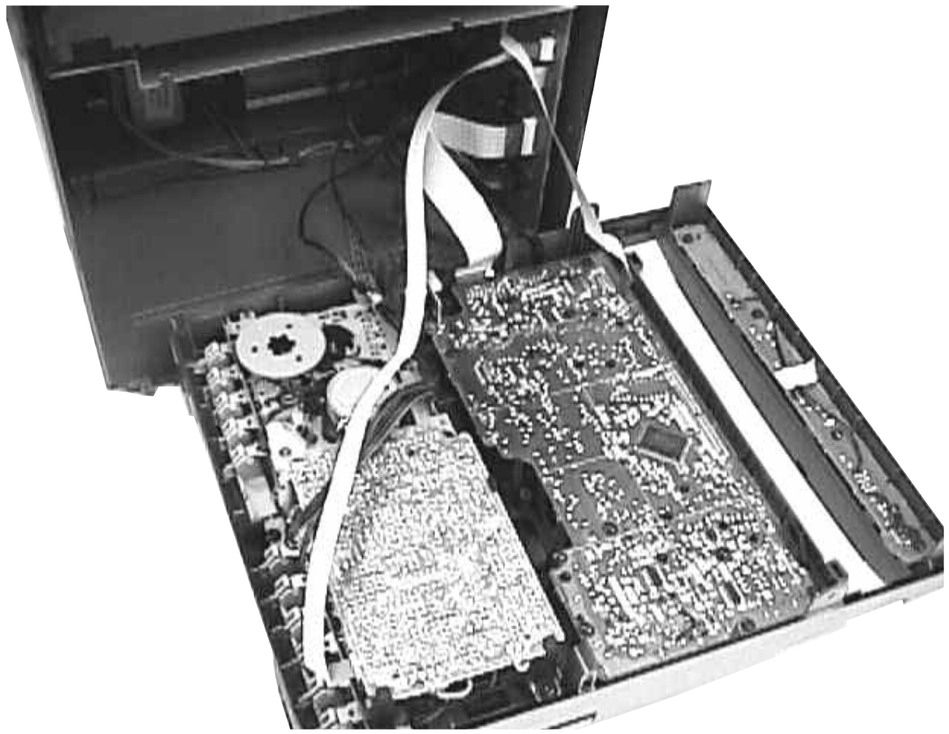
This Loudspeaker Box is not designed to be repaired! The steps below makes it possible to replace defective parts but the service repairman must exercise extreme care not to damage the Louspeaker box.

1) Marked out a rectangular area on the Rear of the Loudspeaker box giving it a 2cm skirting all round (see picture).
2) Use a zigsaw (or open-end hand-held saw) cut along the earlier marked out line.
   Caution: Be extra careful not to cut the Loudspeaker Wires near the bottom of the LS box.
3) Prepare a Chipboard (thickness 5 - 8 mm) of size L x W to cover back the cut-out after replacement of defective parts.
4) Use any self-tapping wood screw to tighten the new Chipboard onto the 2cm width skirting.

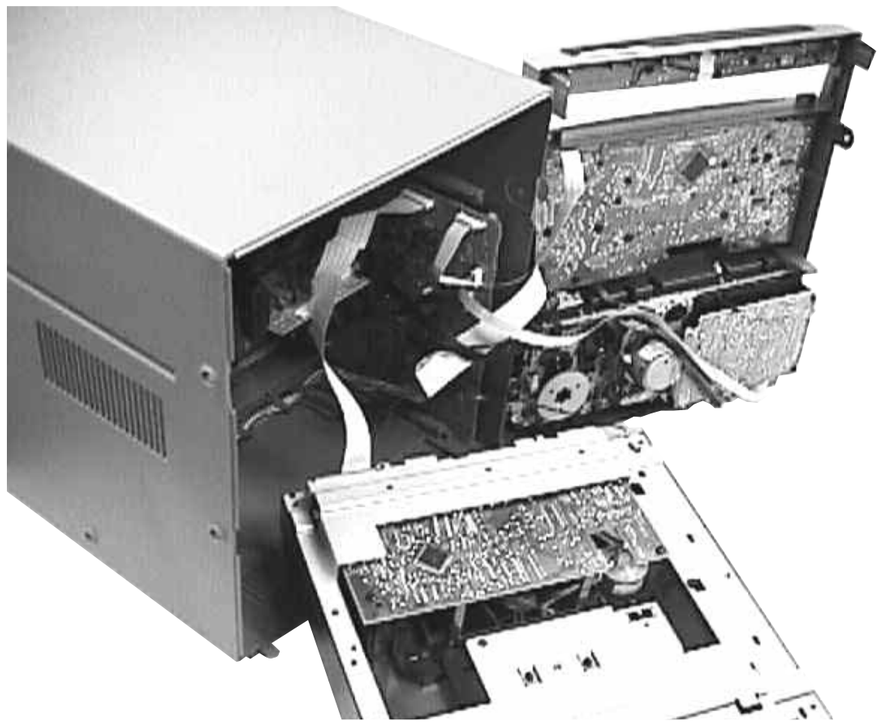


Rear View of Loudspeaker Box

Service pos A

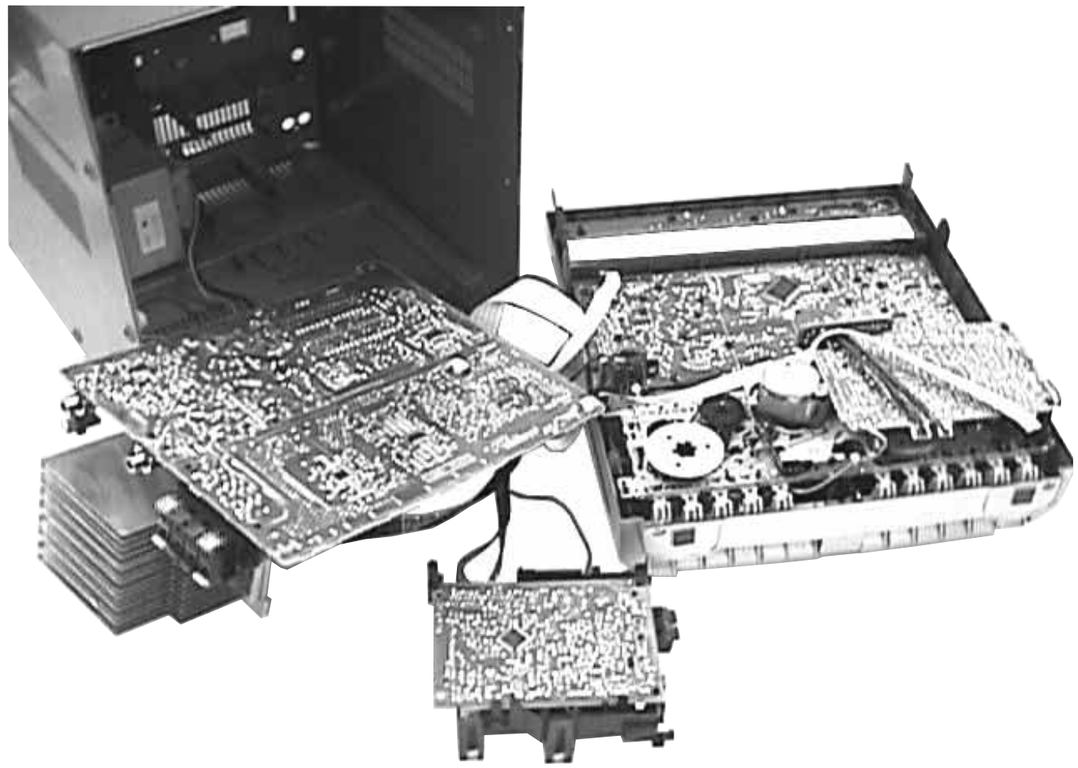


Service pos B



3-3

Service pos C



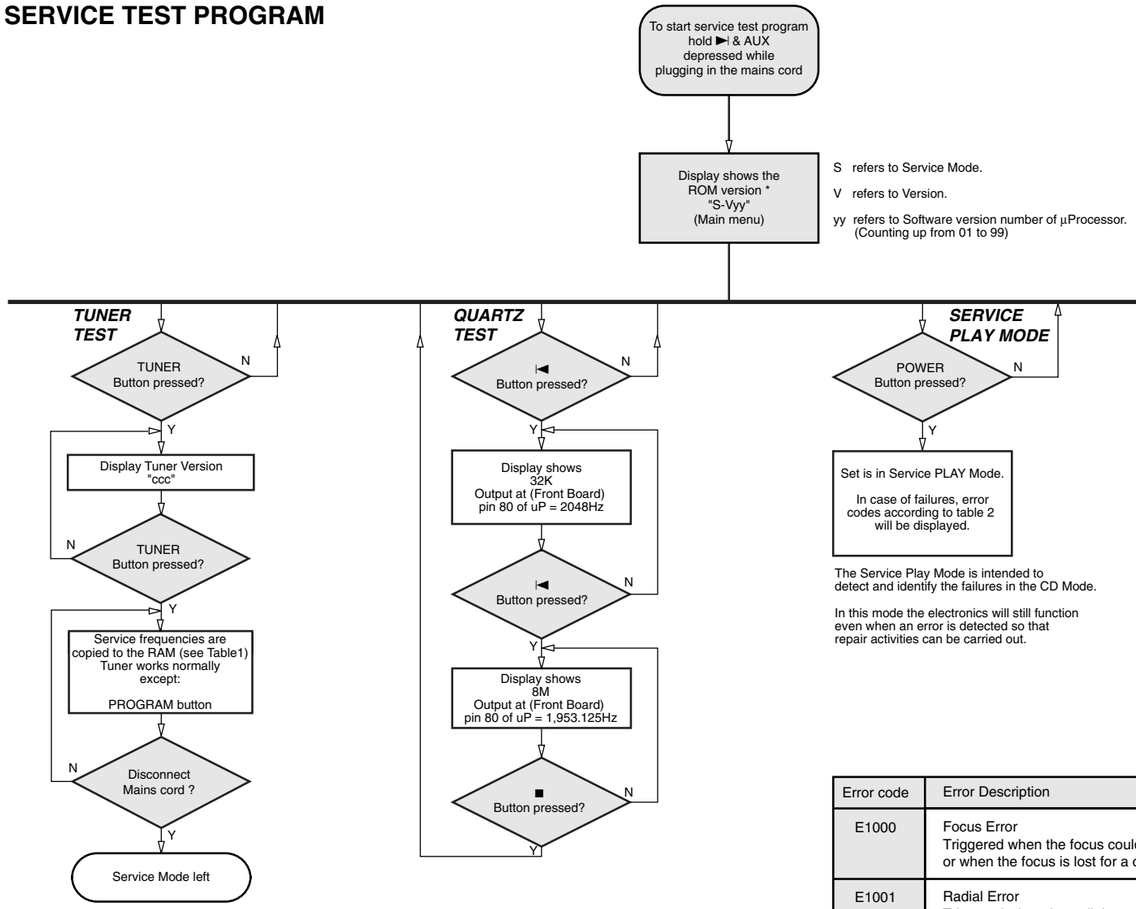
Notes:

1. During repair it is possible to disconnect the following assemblies or modules while repairing other areas:
   - Tuner Board
   - CDC Module

2. The flex cables are very fragile, care should be taken not to damage them during repair. After repair, be very sure that the flex cables are inserted properly into the flex sockets before encasing, otherwise faults may occurs.

3-4

SERVICE TEST PROGRAM


To start service test program hold ▶I & AUX depressed while plugging in the mains cord
Display shows the ROM version * "S-Vyy" (Main menu)
S refers to Service Mode.
V refers to Version.
yy refers to Software version number of µProcessor. (Counting up from 01 to 99)
TUNER TEST
TUNER Button pressed?
Display Tuner Version "ccc"
TUNER Button pressed?
Service frequencies are copied to the RAM (see Table1) Tuner works normally except: PROGRAM button
Disconnect Mains cord ?
Service Mode left
QUARTZ TEST
I◄ Button pressed?
Display shows 32K Output at (Front Board) pin 80 of uP = 2048Hz
I◄ Button pressed?
Display shows 8M Output at (Front Board) pin 80 of uP = 1,953.125Hz
■ Button pressed?
SERVICE PLAY MODE
POWER Button pressed?
Set is in Service PLAY Mode.
In case of failures, error codes according to table 2 will be displayed.
DISPLAY TEST
▶ Button pressed?
Display shows Fig. 1 and switch all LEDs on
▶ Button pressed?
Display shows Fig. 2 and selected LEDs on (see note ♪)
■ Button pressed?
Various other Tests

PRESET	Europe "EUR"	East Eur. "EAS"	East Eur. Extended-band "EAS"	USA "USA"	Oversea "OSE"
1	87.5MHz	87.5MHz	65.81MHz	87.5MHz	87.5MHz
2	108MHz	108MHz	108MHz	108MHz	108MHz
3	531kHz	531kHz	74MHz	530kHz	531/530kHz*
4	1602kHz	1602kHz	87.5MHz	1700kHz	1602/1700kHz*
5	558kHz	558kHz	531kHz	560kHz	558/560kHz*
6	1494kHz	1494kHz	1602kHz	1500kHz	1494/1500kHz*
7	153kHz	87.5MHz	558kHz	98MHz	87.5/98MHz*
8	279kHz	87.5MHz	1494kHz	87.5MHz	87.5MHz
9	198kHz	87.5MHz	98MHz	87.5MHz	87.5MHz
10	98MHz	87.5MHz	70.01MHz	87.5MHz	87.5MHz
11	87.5MHz	98MHz	65.81MHz	87.5MHz	98/87.5MHz*

Table 1

Note: * Depending on the selected grid frequency (9 or 10kHz)
By holding the TUNER and ►► buttons depressed while switching on the Mains supply, one of the undermentioned features will be activated:
- the tuning grid frequency is toggled between 9kHz and 10kHz for the Oversea (/21) version.
- the extended FM1 (65.81MHz - 74MHz) is toggled on and off for East Eur. (/34) version.

The Service Play Mode is intended to detect and identify the failures in the CD Mode.

In this mode the electronics will still function even when an error is detected so that repair activities can be carried out.

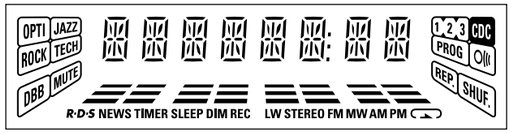
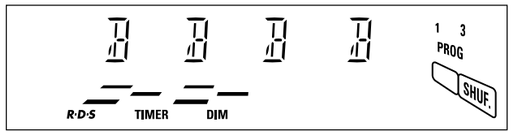


Figure 1



note ♪: DISC1, DISC3, TUNER, JAZZ and TECHNO

Figure 2

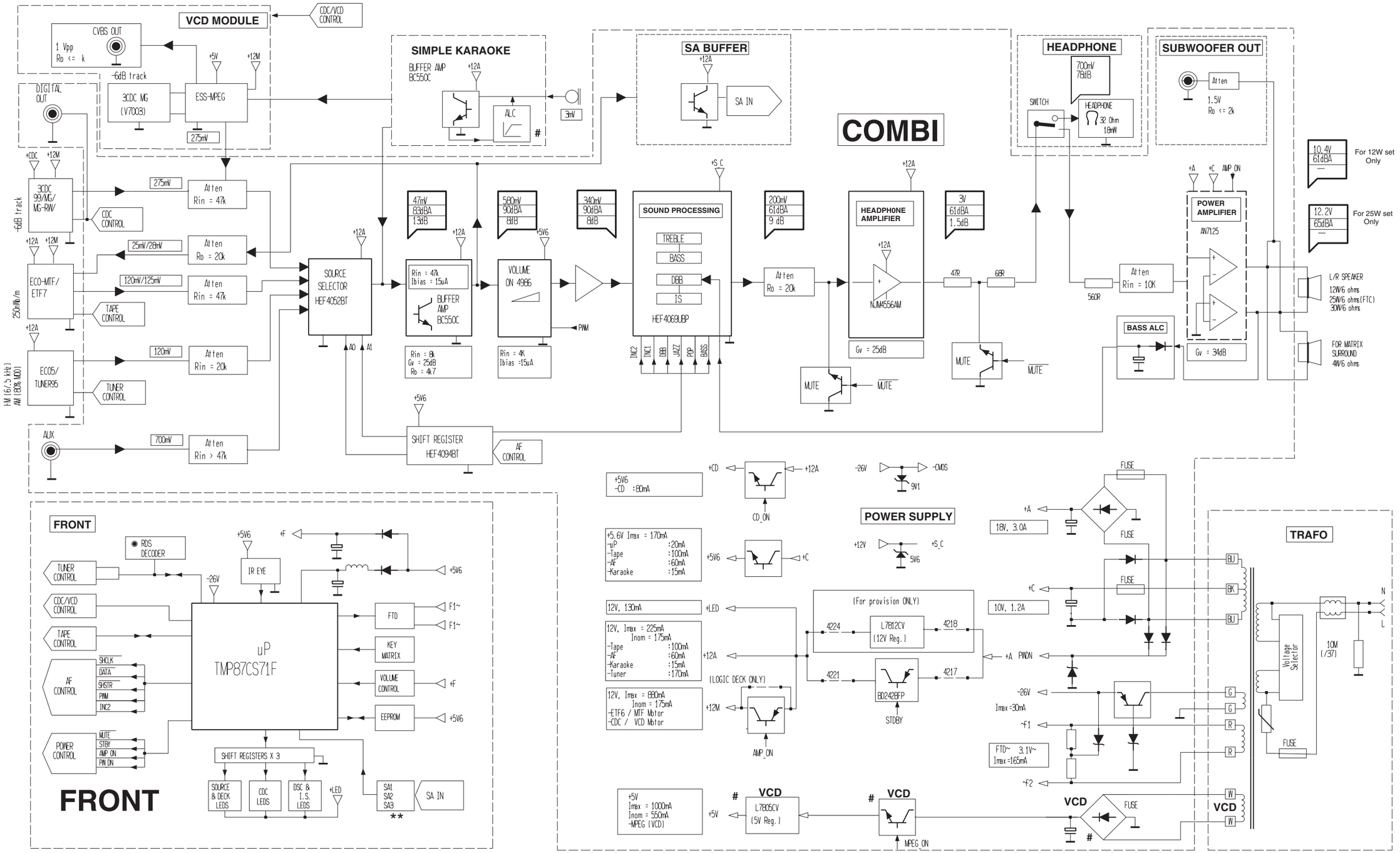
Error code	Error Description
E1000	Focus Error Triggered when the focus could not be found within a certain time when starting up the CD or when the focus is lost for a certain time during play.
E1001	Radial Error Triggered when the radial servo is off-track for a certain time during play.
E1002	Sledge In Error The sledge did not reach its inner position (inner-switch is still close) before approximately 6 Sec. have passed by. Inner-switch or sledge motor problem.
E1003	Sledge Out Error The sledge did not come out of its inner position (inner-switch is still open) before approximately 250 mSec. have passed by. Inner-switch or sledge motor problem.
E1005	Jump-offtrack error Triggered in normal play when the jump destination could not be found within a certain time. When this error occurred, software will try to recover by initiating the jump command again. If it is recoverable, the disc will continue to play.
E1006	Subcode Error Triggered when a new subcode was missing for a certain time during play.
E1007	PLL Error The Phase Lock Loop could not lock within a certain time.
E1008	Turntable Motor Error Generated when the CD could not reached 75% of speed during startup within a certain time. Discmotor problem.
E1020	Focus Search Error The focus point has not been found within a certain time.
E1070	The carousel switch is not open within certain time. This can happen when either the switch is defective and closed all the time, or when the carousel is blocked when located exactly at a disc position.
E1071	The carousel position switch did not close within a certain time. This can happen when the switch is defective and never closes electrically, or when the carousel is blocked in between two disc positions. The time-out is approximately 5 Sec.
E1079	The drawer could not enter the inside position is opening again. This can be caused because the drawer is blocked by something and cannot go fully inside, or the drawer switch is defective and does not close.

Table 2

TEST	***Activated with***	***ACTION***
EEPROM TEST	►► ■ to Exit	A test pattern will be sent to the EEPROM. "PASS" is displayed if the uProcessor read back the test pattern correctly, otherwise "ERROR" will be displayed.
EEPROM FORMAT	◄◄	Load default data. Display shows "NEW" for 1 second. ***Caution!*** ***All presets from the customer will be lost!!***
ENCODER TEST	Volume Knob or Jog Shuttle knob	Display shows value for 2 seconds. Values increases or decreases in steps of 1 until 0 (Min.) or 40 (Max.) is reached.
LEAVE SERVICE TESTPROGRAM	Disconnect mains cord	

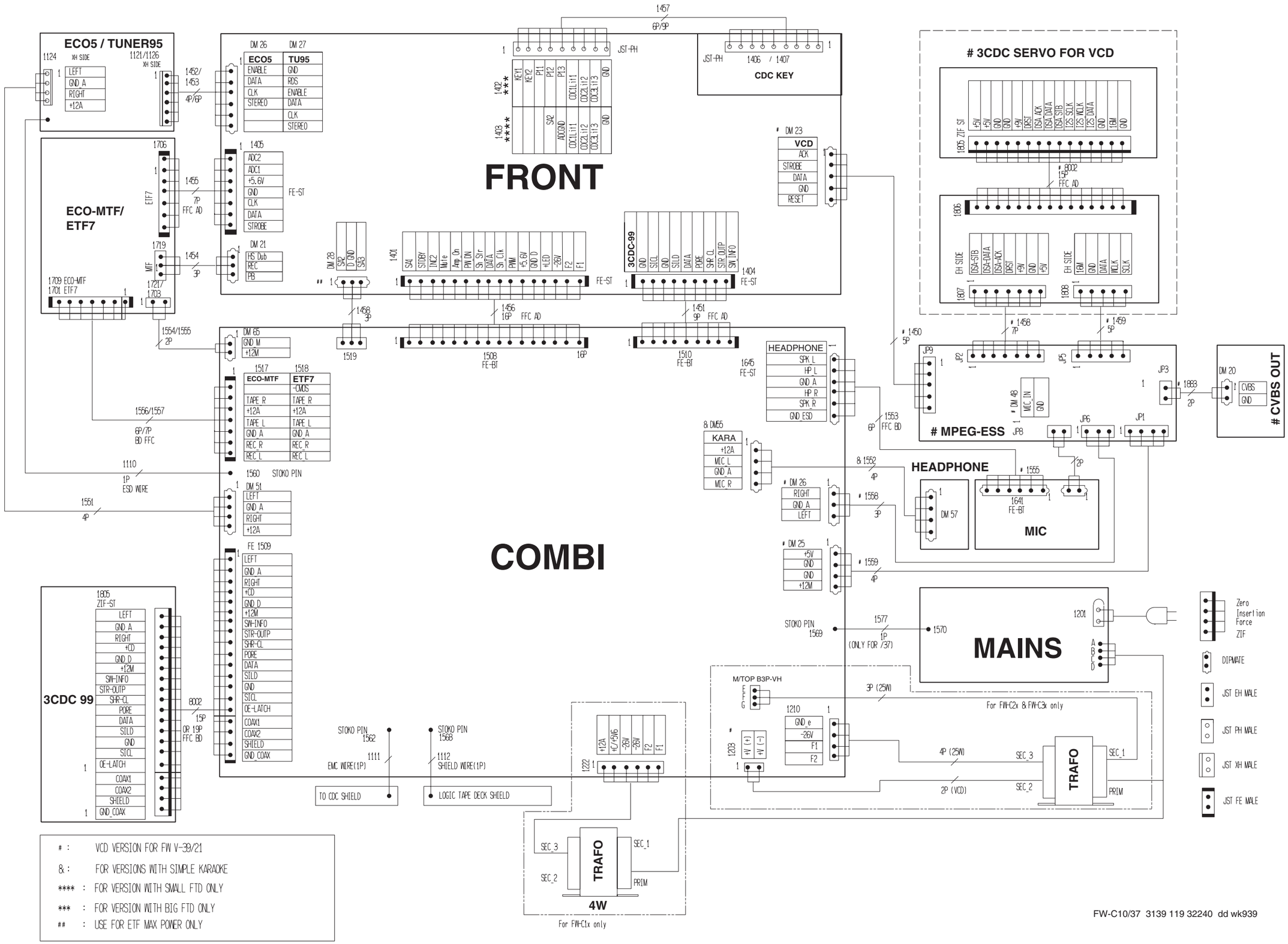
4-1

SET BLOCK DIAGRAM



5-1

SET WIRING DIAGRAM



FW-C10/37 3139 119 32240 dd wk939

FRONT BOARD

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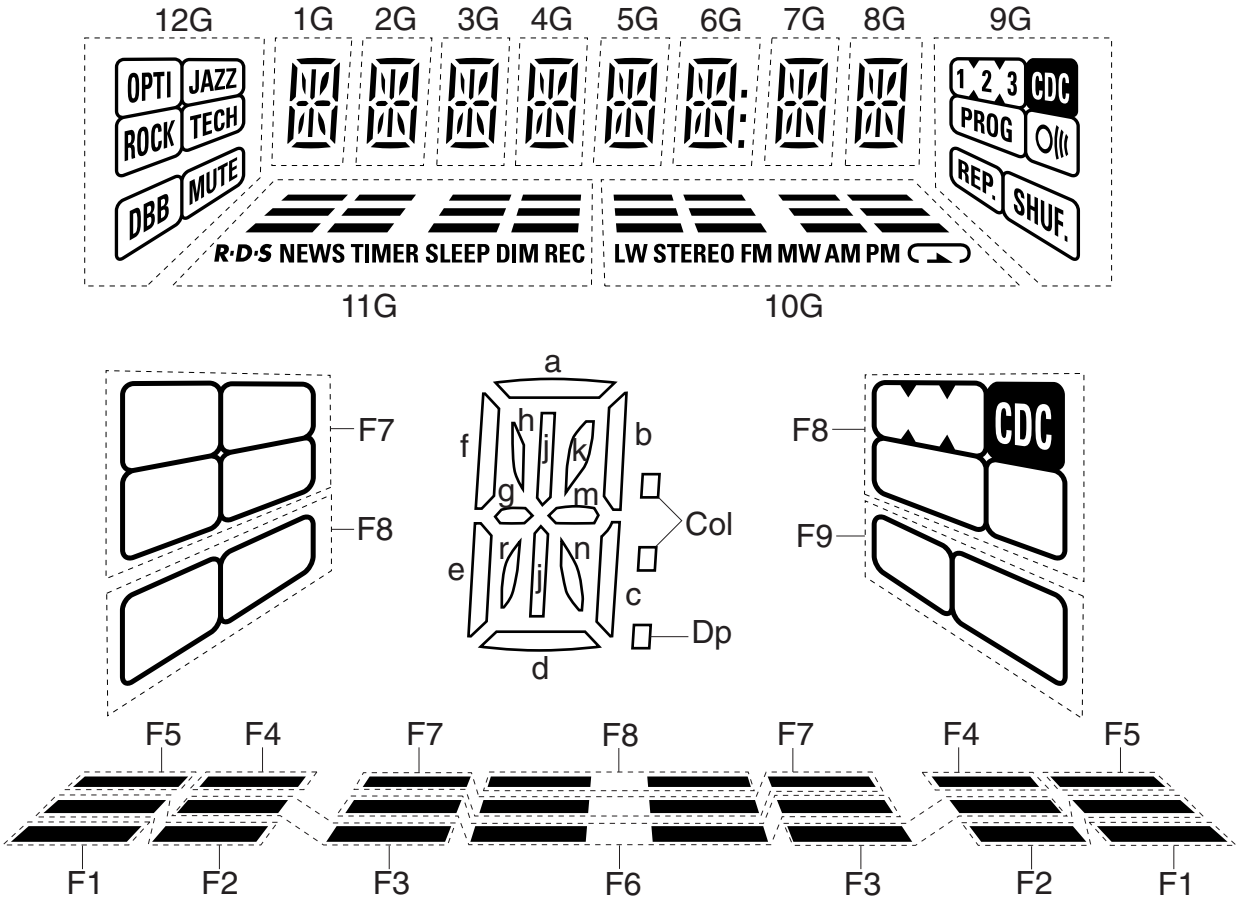
FTD DISPLAY PIN CONNECTIONS



	1G - 5G	6G	7G - 8G	9G	10G	11G	12G
P1	a	a	a	1	F1	F1	OPTI
P2	h	h	h	2	F2	F2	JAZZ
P3	j	j	j	3	F3	F3	TECH
P4	k	k	k		F4	F4	MUTE
P5	b	b	b	SHUF.	F5	F5	DBB
P6	f	f	f	REP.	F6	F6	ROCK
P7	m	m	m	PROG	F7	F7	F7
P8	g	g	g	F8	F8	F8	F8
P9	c	c	c	F9	LW	R·D·S	-
P10	e	e	e	-	STEREO	NEWS	-
P11	r	r	r	-	FM	TIMER	-
P12	n	n	n	-	MW	SLEEP	-
P13	d	d	d	-	AM	DIM	-
P14	-	Col	-	-	PM	REC	-
P15	-	Dp	-	-		-	-
P16	-	-	-	-		-	-

Front Board application

A52720	FW-C1/37, FW-C10/22/34/37
A52730	FW-C3/37, FW-C30/30/37, FW-C35/37
A52740	FW-C38/21/21M, FW-C39/21/21/33
A52750	FW-C28/33
A52760	FW-C38/22/34
A52770	FW-C28/22/34
A53070	FW-C30/21/21M
A53080	FW-C38/37, FW-C39/30
A53440	FW-V39/21

FEATURES:	A52720	A52730	A52740	A52750	A52760	A52770	A53070	A53080	A53440	
RDS	-	-	-	-	x	x	-	-	-	
Rotary Encoder	-	x	x	x	x	x	x	x	x	
Jog Encoder	-	x	x	-	x	-	x	x	x	
Spectrum Analyzer	-	-	x	-	x	-	-	x	x	
Biplaner LED	-	x	x	x	x	x	x	x	x	
Small FTD	x	x	-	x	-	x	x	-	-	
Large FTD	-	-	x	-	x	-	-	x	x	

Variations table for Front Board

ITEM NO.	A52720	A52730	A52740	A52750	A52760	A52770	A53070	A53080	A53440	
DM21	x	x	-	-	-	-	x	-	-	
DM23	-	-	-	-	-	-	-	-	x	
DM26	x	x	x	x	-	-	x	x	x	
DM27	-	-	-	-	x	x	-	-	-	
1402	-	-	x	-	x	-	-	x	x	
1403	x	x	-	x	-	x	x	-	-	
1404	x	x	x	x	x	x	x	x	-	
1405	-	-	x	x	x	x	-	x	x	
1418	-	-	x	-	x	-	-	x	x	
1419	-	-	x	-	x	-	-	x	x	
1420	-	-	x	-	x	-	-	x	x	
1421	-	-	x	x	x	x	-	x	x	
1423	-	-	x	x	x	x	-	x	x	
1425	-	-	-	x	x	x	-	-	x	
1426	-	-	x	x	x	x	-	x	x	
1427	-	-	-	x	x	-	-	-	x	
1428	x	-	-	-	-	-	-	-	-	
1429	x	-	-	-	-	-	-	-	-	
1430	x	-	-	x	-	x	-	-	-	
2417	-	220µF	220µF	220µF	220µF	220µF	220µF	220µF	220µF	
2421	2,2µF	22µF	22µF	22µF	22µF	22µF	22µF	22µF	22µF	
2432	-	-	-	-	100pF	100pF	-	-	-	
2433	-	-	-	-	47pF	47pF	-	-	-	
2462	-	220nF	220nF	220nF	220nF	220nF	220nF	220nF	220nF	

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ITEM NO.	A52720	A52730	A52740	A52750	A52760	A52770	A53070	A53080	A53440	
3407	-	-	1k	-	1k	-	-	1k	1k	
3458	-	-	1k	-	1k	-	-	1k	1k	
3460	-	-	1k	-	1k	-	-	1k	1k	
3465	-	1k	1k	1k	1k	1k	1k	1k	1k	
3471	4R7	4R7	1R	4R7	1R	4R7	4R7	1R	1R	
3479	-	1k	1k	1k	1k	1k	1k	1k	1k	
3483	4R7	4R7	1R	4R7	1R	4R7	4R7	1R	1R	
3516	330R	-	-	-	-	-	-	-	-	
3518	-	-	330R	-	330R	-	-	330R	330R	
3524	-	-	1k	-	1k	-	-	1k	1k	
3539	10k	10k	10k	10k	-	-	10k	10k	10k	
3541	-	-	-	-	1k	1k	-	-	-	
3546	10k	10k	10k	10k	-	-	10k	10k	10k	
3555	10k	10k	-	10k	-	10k	10k	-	-	
3575	10k	10k	-	10k	-	10k	10k	-	-	
3576	10k	10k	-	10k	-	10k	10k	-	-	
3577	-	-	12k	-	12k	-	-	12k	12k	
3578	-	-	5k6	-	5k6	-	-	5k6	5k6	
3586	-	-	1k	-	1k	-	-	1k	1k	
3588	10k	-	-	-	-	-	-	-	-	
3600	5k6	5k6	-	5k6	-	5k6	5k6	-	-	
3602	10k	10k	-	10k	-	10k	10k	-	-	
3603	6k8	10k	10k	10k	10k	10k	10k	10k	10k	
3613	47k	12k	12k	12k	12k	12k	12k	12k	12k	
4400	x	-	-	x	-	x	-	-	-	
4407	x	x	-	x	-	x	x	-	-	
4412	-	-	x	-	x	-	-	x	x	
4413	x	-	-	-	-	-	-	-	-	
4417	x	-	-	x	-	x	-	-	-	
4436	x	-	-	x	-	x	-	-	-	
6401	-	x	x	-	x	-	x	x	x	
6402	-	-	x	-	x	-	-	x	x	
6404	-	x	x	-	x	-	x	x	x	
6405	-	-	x	-	x	-	-	x	x	
6420	-	-	x	-	x	-	-	x	x	
6422	x	-	-	-	-	-	-	-	-	
6423	-	-	x	x	-	-	x	-	x	
6424	-	x	-	x	-	x	x	-	-	
6428	-	x	x	x	x	x	x	x	x	
6433	-	x	-	-	-	-	x	-	-	
6445	x	-	-	x	-	x	-	-	-	
6446	x	-	-	x	-	x	-	-	-	
6447	x	x	-	x	-	x	x	-	-	
9475	x	x	-	x	-	x	x	-	-	
9488	-	x	x	-	x	-	x	x	x	
9520	-	x	x	-	x	-	x	x	x	
9523	x	x	-	x	-	x	x	-	-	

x = Item in use.

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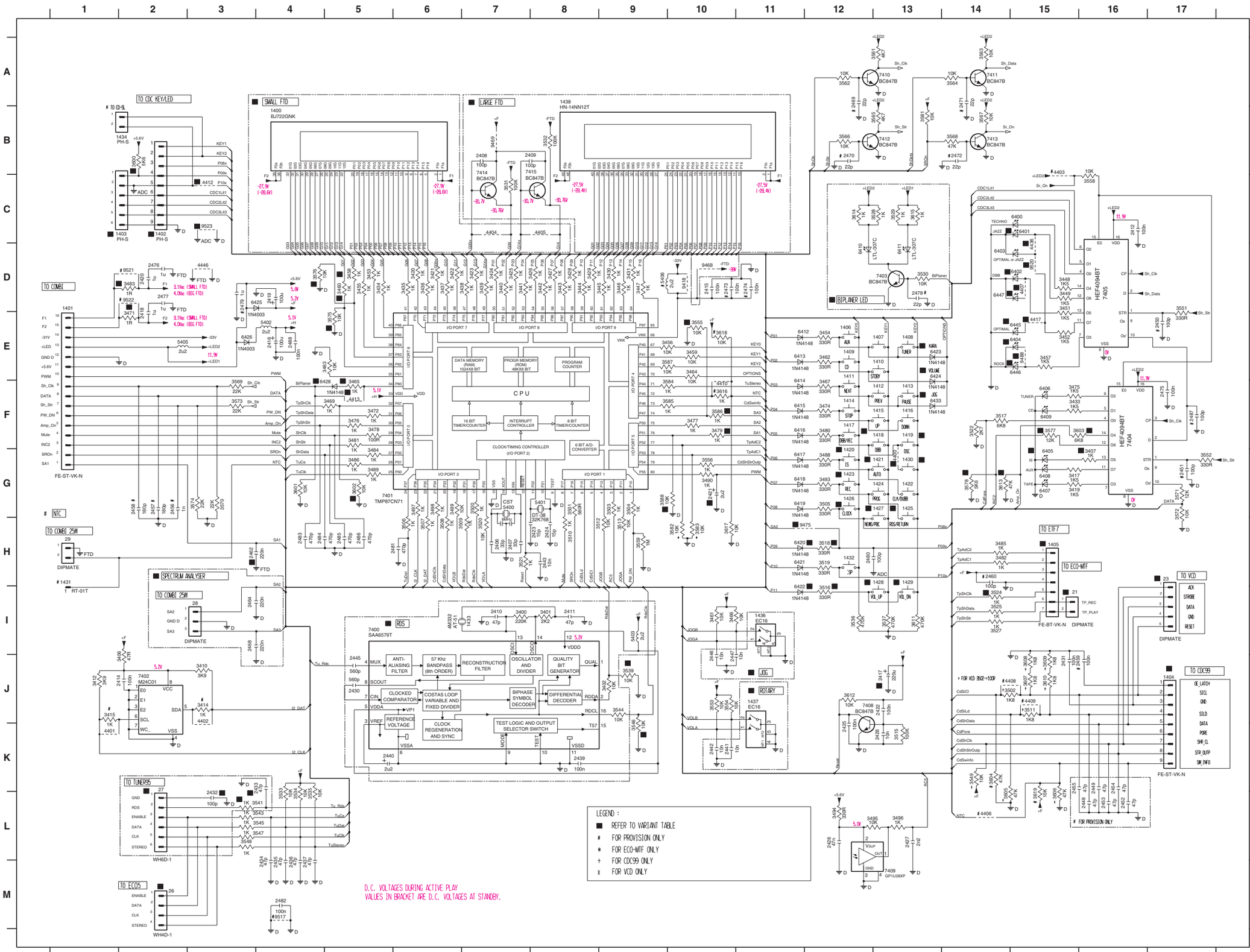
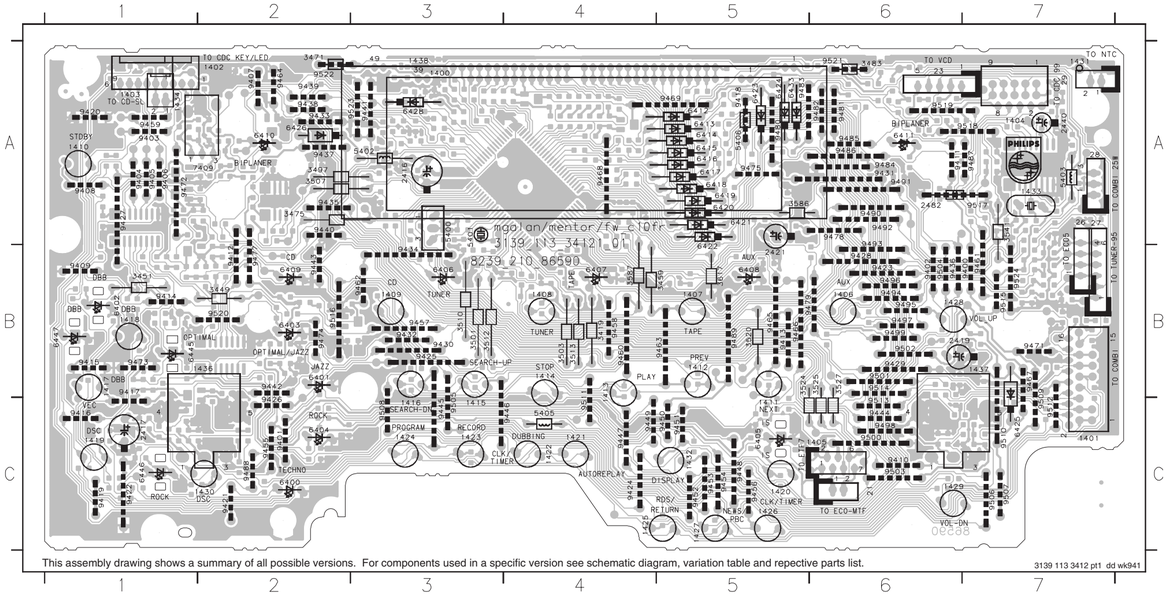
CIRCUIT DIAGRAM



21 I15 23 H17 26 M2 27 K2 28 I3 29 H1 1400 B4 1401 D1 1402 C2 1403 C1 1404 J17 1405 H15 1406 E12 1407 E13 1408 E13 1409 E12 1410 E13 1411 E12 1412 F13 1413 F13 1414 F12 1415 F13 1416 F13 1417 F12 1418 F13 1419 F13 1420 G12 1421 G13 1422 G13 1423 G12 1424 G13 1425 G13 1426 G13 1427 G13 1428 H13 1429 H13 1430 G13 1431 H1 1432 H12 1433 I7 1434 B1 1436 I11 1437 J11 1438 A8 2406 H7 2407 H7 2408 B7 2409 B8 2410 I7 2411 I8 2412 C16 2414 J2 2415 D10 2416 E4 2417 J13 2418 E2 2419 D4 2420 D2 2421 G10 2422 J13 2423 H8 2424 H8 2425 K12 2426 L12 2427 L13 2428 K13 2430 J5 2431 J15 2432 L3 2433 K3 2434 M4 2435 M4 2436 M4 2437 M4 2439 K6 2440 K5 2441 K10 2442 K10 2443 H8 2445 J5 2446 J10 2447 J10 2448 L16 2449 K16 2450 E17 2451 G17 2452 L16 2453 L16 2454 K16 2455 K15 2456 G2 2457 G2 2458 G2 2459 J15 2460 H14 2462 H3 2464 I3 2468 I3 2469 A12 2470 B12 2471 A14 2472 B14 2473 D10 2474 D11 2475 F17 2476 D2 2477 D2 2478 D13 2479 D3 2480 H12 2481 H6 2482 M4 2483 H4 2484 H4 2485 H5 2486 H5 2487 F17 2488 E4 3400 I7 3401 I8 3402 J9 3406 J2 3407 G16 3410 J3 3412 J1 3414 J3 3415 J1 3417 G15 3419 G15 3420 D6 3421 D6 3422 D6 3423 D7 3424 D7 3425 D7 3426 D8 3427 D8 3428 D8 3429 D8 3430 D9 3431 D9 3433 F15 3434 D5 3435 D6 3436 D6 3437 D6 3438 D7 3439 D7 3440 D7 3441 D7 3442 D8 3443 D8 3444 D8 3445 D9 3446 D9 3447 D9 3448 D15 3449 D15 3451 D15 3452 E15 3453 D5 3454 E12 3455 D5 3456 E10 3457 E15 3458 D5 3459 E10 3460 D5 3461 I10 3462 E12 3463 E5 3464 E10 3465 F5 3466 I10 3467 F12 3469 F5 3470 F10 3471 E2 3472 F5 3474 F12 3475 F15 3476 F5 3477 F10 3478 F5 3480 F12 3481 F5 3482 H14 3483 D2 3484 G5 3485 H14 3486 G5 3488 G12 3489 G5 3490 G10 3493 G12 3494 L12 3495 L12 3496 L13 3497 G6 3498 G6 3499 G6 3500 G7 3501 G8 3502 J15 3503 G9 3504 G9 3505 G12 3506 H6 3507 H6 3508 H6 3509 H6 3510 H8 3511 J15 3512 H8 3513 H9 3514 H12 3515 H12 3517 F14 3518 H12 3519 H12 3520 H7 3521 H7 3522 F14 3524 I14 3525 I14 3527 I14 3530 D13 3531 C7 3532 B8 3533 L4 3534 L4 3535 L4 3536 I12 3537 I13 3539 J9 3541 L4 3543 L4 3544 J9 3545 L4 3547 L4 3548 L3 3549 K14 3551 D17 3552 G17 3553 J10 3554 J10 3555 E10 3556 G10 3558 C16 3559 H9 3561 A13 3562 A12 3563 A14 3564 A14 3565 B13 3566 B12 3567 B14 3568 B14 3569 F3 3570 G3 3571 G17 3572 G17 3573 F3 3574 G3 3575 E5 3576 D4 3577 F15 3578 G14 3581 B13 3583 H10 3584 F10 3585 F10 3586 E10 3587 E10 3588 G9 3600 B2 3601 G4 3602 G5 3603 F16 3604 K14 3605 L14 3606 L15 3607 J15 3608 J15 3609 J15 3610 J15 3611 I13 3612 J12 3613 G14 3614 C12 3615 C13 3526 C13 3529 C13 3530 D13 3531 C7 3532 B8 3533 L4 3534 L4 3535 L4 3536 I12 3537 I13 3539 J9 3541 L4 3543 L4 3544 J9 3545 L4 3547 L4 3548 L3 3549 K14 3551 D17 3552 G17 3553 J10 3554 J10 3555 E10 3556 G10 3558 C16 3559 H9 3561 A13 3562 A12 3563 A14 3564 A14 3565 B13 3566 B12 3567 B14 3568 B14 3569 F3 3570 G3 3571 G17 3572 G17 3573 F3 3574 G3 3575 E5 3576 D4 3577 F15 3578 G14 3581 B13 3583 H10 3584 F10 3585 F10 3586 E10 3587 E10 3588 G9 3600 B2 3601 G4 3602 G5 3603 F16 3604 K14 3605 L14 3606 L15 3607 J15 3608 J15 3609 J15 3610 J15 3611 I13 3612 J12 3613 G14 3614 C12 3615 C13 4400 G13 4401 K1 4402 J3 4403 B15 4404 C7 4405 C8 4406 L14 4407 D15 4408 J15 4409 J15 4410 F10 4412 C3 4413 F5 4414 E15 4416 E15 4417 E15 4436 D15 4446 D3 5400 G7 5401 G8 5402 E4 5403 I9

COMPONENT LAYOUT



This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram, variation table and repective parts list.

3139 113 3412.pt1 dd wk941

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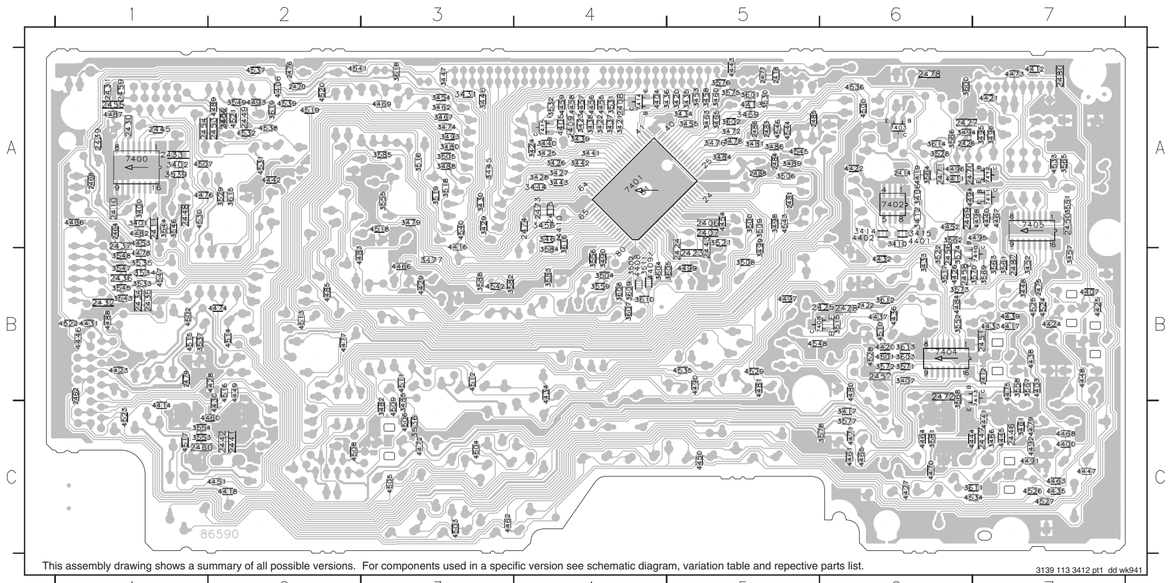
CHIP LAYOUT



This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram, variation table and repective parts list.

3139 113 3412.pt1 dd wk941

ELECTRICAL PARTS LIST - FRONT BOARD

MISCELLANEOUS

1400	313911052070	FTD Display BJ722GNK
1401	242202514546	Flex Socket 16pin Hort.
1404	482226511531	Flex Socket 9pin Hort.
1406	482227613775	Tact Switch
1407	482227613775	Tact Switch
1408	482227613775	Tact Switch
1409	482227613775	Tact Switch
1410	482227613775	Tact Switch
1411	482227613775	Tact Switch
1412	482227613775	Tact Switch
1413	482227613775	Tact Switch
1414	482227613775	Tact Switch
1415	482227613775	Tact Switch
1416	482227613775	Tact Switch
1417	482227613775	Tact Switch
1422	482227613775	Tact Switch
1424	482227613775	Tact Switch
1432	482227613775	Tact Switch
1436	482227310366	Rotary Encoder 24P
1437	482227310365	Rotary Encoder 24P

CAPACITORS

2406	532212232659	33pF 5% 50V
2407	532212232659	33pF 5% 50V
2412	482212614585	100nF 10% 50V
2414	482212613838	100nF +80/-20% 50V
2415	482212614585	100nF 10% 50V
2416	482212423432	100µF 20% 10V
2417	482212440196	220µF 20% 16V
2418	482212614043	1µF +80-20% 16V
2419	482212441584	100µF 20% 10V
2420	482212614043	1µF +80-20% 16V
2421	482212481151	22µF 20% 50V
2422	482212614585	100nF 10% 50V
2423	482212613486	15pF 2% 63V
2424	482212613486	15pF 2% 63V
2425	482212613838	100nF +80/-20% 50V
2426	482212613751	47nF 10% 63V
2427	482212233127	2,2nF 10% 63V
2428	482212233177	10nF 20% 50V
2431	482212614585	100nF 10% 50V
2434	482212613692	47pF 1% 63V
2435	482212613692	47pF 1% 63V
2436	482212613692	47pF 1% 63V
2437	482212613692	47pF 1% 63V
2441	482212233177	10nF 20% 50V
2442	482212233177	10nF 20% 50V
2443	482212233177	10nF 20% 50V
2446	482212233177	10nF 20% 50V
2447	482212233177	10nF 20% 50V
2462	482212614076	220nF +80/-20% 25V
2475	482212614585	100nF 10% 50V
2476	482212614043	1µF +80-20% 16V
2477	482212614043	1µF +80-20% 16V
2481	532212232268	470pF 5% 50V
2482	482212612882	100nF +80/-20% 50V
2483	532212232268	470pF 5% 50V
2484	532212232268	470pF 5% 50V
2485	532212232268	470pF 5% 50V
2486	532212232268	470pF 5% 50V
2488	482212614585	100nF 10% 50V

RESISTORS

3406	482205120479	47R 5% 0,1W
3410	482205120392	3k9 5% 0,1W
3412	482205120392	3k9 5% 0,1W
3417	482211711139	1k5 1% 0,1W
3419	482211652243	1k5 5% 0,5W
3420	482205110102	1k 2% 0,25W
3421	482205110102	1k 2% 0,25W
3422	482205110102	1k 2% 0,25W
3423	482205110102	1k 2% 0,25W
3424	482205110102	1k 2% 0,25W
3425	482205110102	1k 2% 0,25W
3426	482205110102	1k 2% 0,25W
3427	482205110102	1k 2% 0,25W
3428	482205110102	1k 2% 0,25W
3429	482205110102	1k 2% 0,25W
3430	482205110102	1k 2% 0,25W
3431	482205110102	1k 2% 0,25W
3433	482211711139	1k5 1% 0,1W
3434	482205110102	1k 2% 0,25W
3435	482205110102	1k 2% 0,25W
3436	482205110102	1k 2% 0,25W
3437	482205110102	1k 2% 0,25W
3438	482205110102	1k 2% 0,25W
3439	482205110102	1k 2% 0,25W
3440	482205110102	1k 2% 0,25W
3441	482205110102	1k 2% 0,25W
3442	482205110102	1k 2% 0,25W
3443	482205110102	1k 2% 0,25W
3444	482205110102	1k 2% 0,25W
3445	482205110102	1k 2% 0,25W
3446	482205110102	1k 2% 0,25W
3447	482205110102	1k 2% 0,25W
3448	482211711139	1k5 1% 0,1W
3449	482211652243	1k5 5% 0,5W
3451	482211652243	1k5 5% 0,5W
3452	482211711139	1k5 1% 0,1W
3453	482205110102	1k 2% 0,25W
3454	482211713577	330R 1% 1,25W
3455	482205110102	1k 2% 0,25W
3456	482211710833	10k 1% 0,1W
3457	482211711139	1k5 1% 0,1W

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ELECTRICAL PARTS LIST - FRONT BOARD

3459	482211710833	10k 1% 0,1W
3461	482211710833	10k 1% 0,1W
3462	482211713577	330R 1% 1,25W
3463	482211710833	10k 1% 0,1W
3464	482211710833	10k 1% 0,1W
3465	482205110102	1k 2% 0,25W
3466	482211710833	10k 1% 0,1W
3467	482211713577	330R 1% 1,25W
3469	482205110102	1k 2% 0,25W
3471	482205024708	4R7 1% 0,6W
3472	482205110102	1k 2% 0,25W
3474	482211713577	330R 1% 1,25W
3475	482211652243	1k5 5% 0,5W
3476	482205110102	1k 2% 0,25W
3477	482205110102	1k 2% 0,25W
3478	482205120101	100R 5% 0,1W
3479	482205110102	1k 2% 0,25W
3480	482211713577	330R 1% 1,25W
3481	482205110102	1k 2% 0,25W
3482	482205110102	1k 2% 0,25W
3483	482205024708	4R7 1% 0,6W
3484	482205110102	1k 2% 0,25W
3485	482205110102	1k 2% 0,25W
3486	482205110102	1k 2% 0,25W
3488	482211713577	330R 1% 1,25W
3489	482205110102	1k 2% 0,25W
3490	482205110102	1k 2% 0,25W
3493	482211713577	330R 1% 1,25W
3494	482211713577	330R 1% 1,25W
3495	482211710833	10k 1% 0,1W
3496	482205110102	1k 2% 0,25W
3497	482205011002	1k 1% 0,4W
3498	482205110102	1k 2% 0,25W
3499	482211710833	10k 1% 0,1W
3500	482205110102	1k 2% 0,25W
3501	482211652226	560R 5% 0,5W
3502	482205120182	1k8 5% 0,1W
3503	482205011002	1k 1% 0,4W
3504	482205110102	1k 2% 0,25W
3505	482211713577	330R 1% 1,25W
3506	482205110102	1k 2% 0,25W
3507	482205011002	1k 1% 0,4W
3508	482205110102	1k 2% 0,25W
3509	482205110102	1k 2% 0,25W
3510	482205011002	1k 1% 0,4W
3511	482205120182	1k8 5% 0,1W
3512	482205021003	10k 1% 0,6W
3513	482205021003	10k 1% 0,6W
3515	482211710837	100k 1% 0,1W
3517	482211711507	6k8 1% 0,1W
3519	482211713577	330R 1% 1,25W
3520	482205021003	10k 1% 0,6W
3521	482205110102	1k 2% 0,25W
3522	482211712955	2k7 1% 0,1W
3525	482205011002	1k 1% 0,4W
3527	482205011002	1k 1% 0,4W
3528	482205110102	1k 2% 0,25W
3529	482205110102	1k 2% 0,25W
3530	482211710833	10k 1% 0,1W
3533	482211710833	10k 1% 0,1W
3534	482211710833	10k 1% 0,1W
3535	482211710833	10k 1% 0,1W
3536	482205120474	470k 5% 0,1W
3537	482205120474	470k 5% 0,1W
3539	482211710833	10k 1% 0,1W
3543	482205110102	1k 2% 0,25W
3545	482205110102	1k 2% 0,25W
3546	482211710833	10k 1% 0,1W
3547	482205110102	1k 2% 0,25W
3548	482205110102	1k 2% 0,25W
3549	482211710833	10k 1% 0,1W
3551	482211713577	330R 1% 1,25W
3552	482211713577	330R 1% 1,25W
3553	482211710833	10k 1% 0,1W
3554	482211710833	10k 1% 0,1W
3555	482211710833	10k 1% 0,1W
3556	482205110102	1k 2% 0,25W
3558	482211710833	10k 1% 0,1W
3559	482205120105	1M 5% 0,1W
3561	482205120472	4k7 5% 0,1W
3562	482211710833	10k 1% 0,1W
3563	482211710833	10k 1% 0,1W
3564	482211710833	10k 1% 0,1W
3565	482205120472	4k7 5% 0,1W
3566	482211710833	10k 1% 0,1W
3567	482211710833	10k 1% 0,1W
3568	482211710834	47k 1% 0,1W
3569	482205120223	22k 5% 0,1W
3570	482205120223	22k 5% 0,1W
3571	482211711383	12k 1% 0,1W
3572	482211710833	10k 1% 0,1W
3573	482205120223	22k 5% 0,1W
3574	482205120223	22k 5% 0,1W
3575	482211710833	10k 1% 0,1W
3576	482211710833	10k 1% 0,1W
3581	482211710833	10k 1% 0,1W
3582	482211710833	10k 1% 0,1W
3583	482211710833	10k 1% 0,1W
3584	482205110102	1k 2% 0,25W
3585	482205110102	1k 2% 0,25W
3587	482205021003	10k 1% 0,6W
3600	482205120562	5k6 5% 0,1W
3601	482211710833	10k 1% 0,1W
3602	482211710833	10k 1% 0,1W

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ELECTRICAL PARTS LIST - FRONT BOARD

3603	482211710833	10k 1% 0,1W
3607	482205120182	1k8 5% 0,1W
3608	482205120182	1k8 5% 0,1W
3609	482205120182	1k8 5% 0,1W
3610	482205120182	1k8 5% 0,1W
3611	482205120474	470k 5% 0,1W
3612	482211710833	10k 1% 0,1W
3613	482211711383	12k 1% 0,1W
3614	482205110102	1k 2% 0,25W
3615	482205110102	1k 2% 0,25W
3617	482205021003	10k 1% 0,6W
4401	482205120008	0R Jumper 0805
4402	482205120008	0R Jumper 0805
4404	482205120008	0R Jumper 0805
4405	482205120008	0R Jumper 0805
4407	482205120008	0R Jumper 0805
4410	482205120008	0R Jumper 0805
4414	482205120008	0R Jumper 0805
4416	482205120008	0R Jumper 0805
4418	482205120008	0R Jumper 0805
4419	482205120008	0R Jumper 0805
4420	482205120008	0R Jumper 0805
4421	482205120008	0R Jumper 0805
4422	482205120008	0R Jumper 0805
4423	482205120008	0R Jumper 0805
4424	482205120008	0R Jumper 0805
4425	482205120008	0R Jumper 0805
4426	482205120008	0R Jumper 0805
4427	482205120008	0R Jumper 0805
4428	482205120008	0R Jumper 0805
4429	482205120008	0R Jumper 0805
4430	482205120008	0R Jumper 0805
4431	482205120008	0R Jumper 0805
4432	482205120008	0R Jumper 0805
4433	482205120008	0R Jumper 0805
4434	482205120008	0R Jumper 0805
4435	482205120008	0R Jumper 0805
4437	482205120008	0R Jumper 0805
4438	482205120008	0R Jumper 0805
4439	482205120008	0R Jumper 0805
4440	482205120008	0R Jumper 0805
4441	482205120008	0R Jumper 0805
4442	482205120008	0R Jumper 0805
4443	482205120008	0R Jumper 0805
4444	482205120008	0R Jumper 0805
4445	482205120008	0R Jumper 0805
4446	482205120008	0R Jumper 0805
4447	482205120008	0R Jumper 0805
4448	482205120008	0R Jumper 0805
4449	482205120008	0R Jumper 0805
4450	482205120008	0R Jumper 0805
4451	482205120008	0R Jumper 0805
4452	482205120008	0R Jumper 0805
4453	482205120008	0R Jumper 0805
4454	482205120008	0R Jumper 0805
4455	482205120008	0R Jumper 0805
4456	482205120008	0R Jumper 0805
4457	482205120008	0R Jumper 0805
4458	482205120008	0R Jumper 0805
4459	482205120008	0R Jumper 0805
4460	482205120008	0R Jumper 0805
4461	482205120008	0R Jumper 0805
4462	482205120008	0R Jumper 0805
4463	482205120008	0R Jumper 0805
4464	482205120008	0R Jumper 0805
4465	482205120008	0R Jumper 0805
4466	482205120008	0R Jumper 0805
4467	482205120008	0R Jumper 0805
4468	482205120008	0R Jumper 0805
4469	482205120008	0R Jumper 0805
4470	482205120008	0R Jumper 0805
4471	482205120008	0R Jumper 0805
4472	482205120008	0R Jumper 0805
4473	482205120008	0R Jumper 0805
4474	482205120008	0R Jumper 0805
4475	482205120008	0R Jumper 0805
4476	482205120008	0R Jumper 0805
4477	482205120008	0R Jumper 0805
4478	482205120008	0R Jumper 0805
4479	482205120008	0R Jumper 0805
4480	482205120008	0R Jumper 0805
4481	482205120008	0R Jumper 0805
4482	482205120008	0R Jumper 0805
4483	482205120008	0R Jumper 0805
4484	482205120008	0R Jumper 0805
4485	482205120008	0R Jumper 0805
4486	482205120008	0R Jumper 0805
4487	482205120008	0R Jumper 0805
4488	482205120008	0R Jumper 0805
4489	482205120008	0R Jumper 0805
4490	482205120008	0R Jumper 0805
4491	482205120008	0R Jumper 0805
4492	482205120008	0R Jumper 0805
4493	482205120008	0R Jumper 0805
4494	482205120008	0R Jumper 0805
4495	482205120008	0R Jumper 0805
4496	482205120008	0R Jumper 0805
4497	482205120008	0R Jumper 0805
4498	482205120008	0R Jumper 0805
4499	482205120008	0R Jumper 0805
4500	482205120008	0R Jumper 0805
4501	482205120008	0R Jumper 0805
4502	482205120008	0R Jumper 0805
4503	482205120008	0R Jumper 0805

ELECTRICAL PARTS LIST - FRONT BOARD

RESISTORS

4504	482205120008	0R Jumper 0805
4505	482205120008	0R Jumper 0805
4506	482205120008	0R Jumper 0805
4507	482205120008	0R Jumper 0805
4508	482205120008	0R Jumper 0805
4509	482205120008	0R Jumper 0805
4510	482205120008	0R Jumper 0805
4511	482205120008	0R Jumper 0805
4512	482205120008	0R Jumper 0805
4513	482205120008	0R Jumper 0805
4514	482205120008	0R Jumper 0805
4515	482205120008	0R Jumper 0805
4516	482205120008	0R Jumper 0805
4517	482205120008	0R Jumper 0805
4518	482205120008	0R Jumper 0805
4519	482205120008	0R Jumper 0805
4520	482205120008	0R Jumper 0805
4521	482205120008	0R Jumper 0805
4522	482205120008	0R Jumper 0805
4523	482205120008	0R Jumper 0805
4524	482205120008	0R Jumper 0805
4525	482205120008	0R Jumper 0805
4526	482205120008	0R Jumper 0805
4527	482205120008	0R Jumper 0805
4528	482205120008	0R Jumper 0805
4529	482205120008	0R Jumper 0805
4530	482205120008	0R Jumper 0805
4531	482205120008	0R Jumper 0805
4532	482205120008	0R Jumper 0805
4533	482205120008	0R Jumper 0805
4534	482205120008	0R Jumper 0805
4535	482205120008	0R Jumper 0805
4536	482205120008	0R Jumper 0805
4537	482205120008	0R Jumper 0805
4538	482205120008	0R Jumper 0805
4539	482205120008	0R Jumper 0805
4540	482205120008	0R Jumper 0805
4541	482205120008	0R Jumper 0805
4542	482205120008	0R Jumper 0805
4543	482205120008	0R Jumper 0805
4544	482205120008	0R Jumper 0805
4545	482205120008	0R Jumper 0805
4546	482205120008	0R Jumper 0805
4547	482205120008	0R Jumper 0805
4548	482205120008	0R Jumper 0805

COILS & FILTERS

5400	482224272066	Ceram Resonator 8MHz
5401	242254301069	Crystal 32,768kHz
5402	482215762552	Coil 2,2µH 5%
5405	482215762552	Coil 2,2µH 5%

DIODES

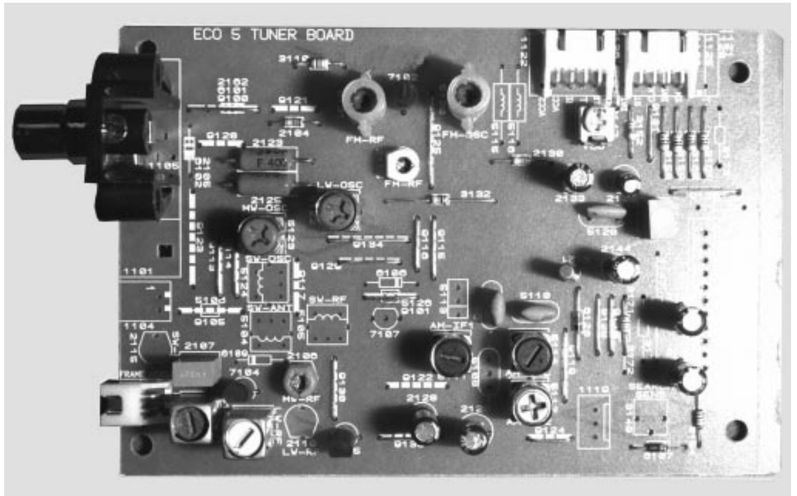
6400	482213082978	LTL-1CHPE
6401	482213082978	LTL-1CHPE
6403	482213082978	LTL-1CHPE
6404	482213082978	LTL-1CHPE
6406	482213082978	LTL-1CHPE
6407	482213082978	LTL-1CHPE
6408	482213082978	LTL-1CHPE
6409	482213082978	LTL-1CHPE
6410	482213083119	LTL-307C
6411	482213083119	LTL-307C
6412	482213030621	1N4148
6413	482213030621	1N4148
6414	482213030621	1N4148
6415	482213030621	1N4148
6416	482213030621	1N4148
6417	482213030621	1N4148
6418	482213030621	1N4148
6419	482213030621	1N4148
6421	482213030621	1N4148
6423	482213030621	1N4148
6424	482213030621	1N4148
6425	482213031878	1N4003G
6426	482213031878	1N4003G
6428	482213030621	1N4148
6433	482213030621	1N4148
6447	482213082978	LTL-1CHPE

TRANSISTORS & INTEGRATED CIRCUITS

7401	313911052100	TMP87CP71F "C10S52101"
7402	932213104668	M24C01-WMN6
7403	482213060511	BC847B
7404	532220911306	HEF4094BT
7405	532220911306	HEF4094BT
7408	482213060511	BC847B
7409	482213010165	GP1U28XP
7410	482213060511	BC847B
7411	482213060511	BC847B
7412	482213060511	BC847B
7413	482213060511	BC847B

Note: Only the parts mentioned in this list are normal service spare parts.

7B-1
7B-1



TUNER BOARD ECO5

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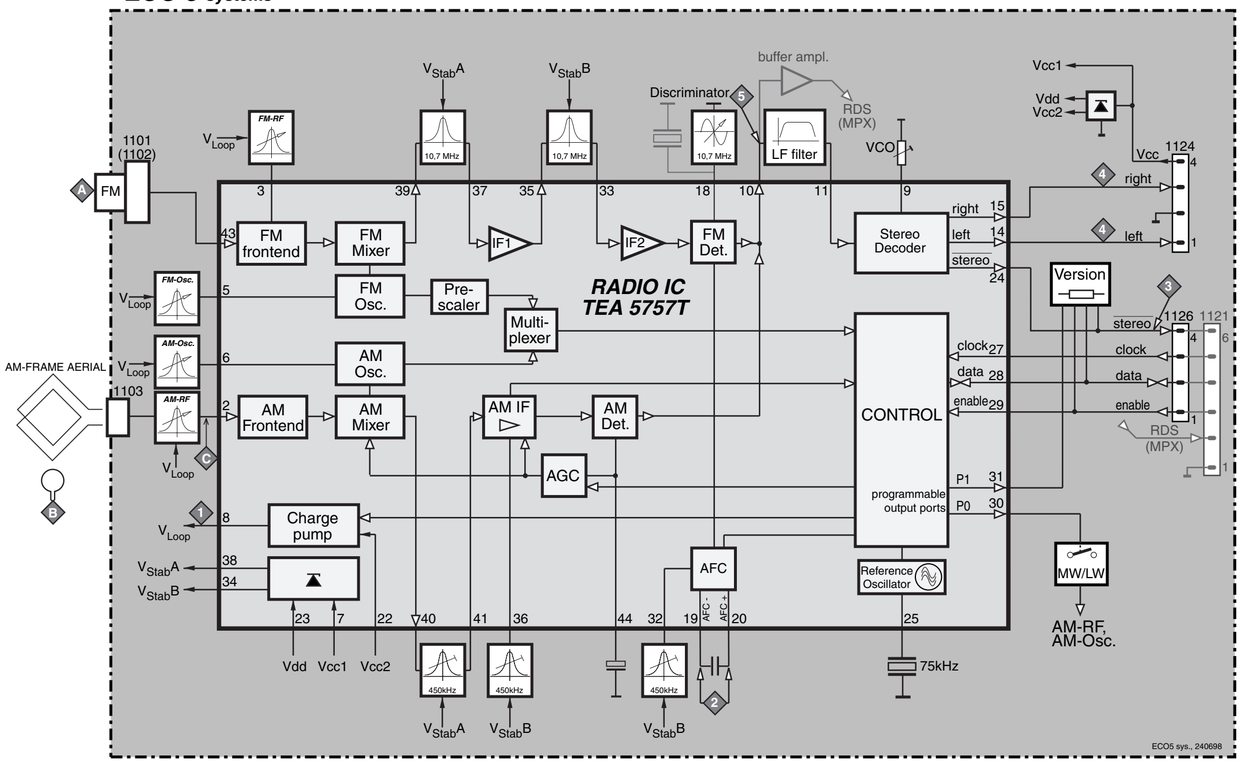
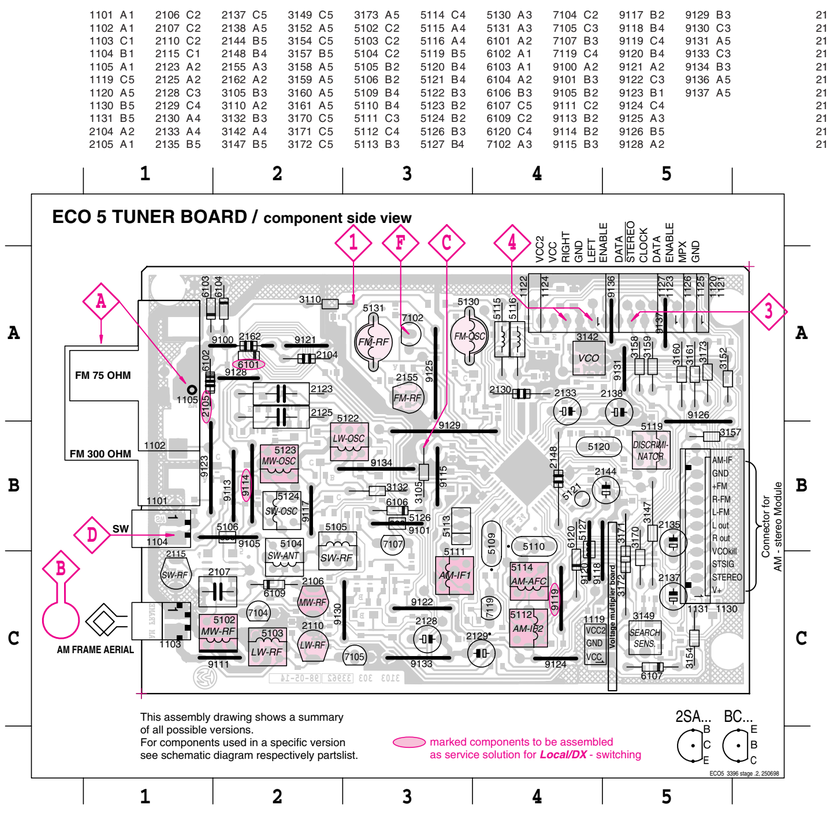
BLOCKDIAGRAM

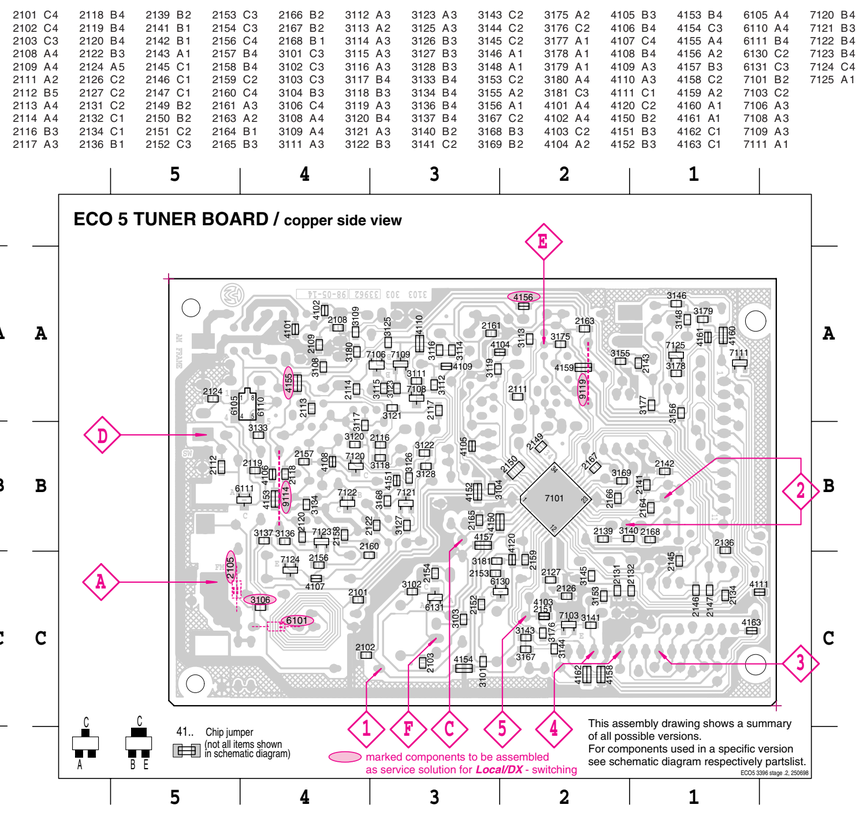
TUNER BOARD
ECO 5 systems



7B-2

7B-2


1101 A1 2106 C2 2137 C5 3149 C5 3173 A5 5114 C4 5130 A3 7104 C2 9117 B2 9129 B3
1102 A1 2107 C2 2138 A5 3152 A5 5102 C2 5115 A4 5131 A3 7105 C3 9118 B4 9130 C3
1103 C1 2110 C2 2144 B5 3154 C5 5103 C2 5116 A4 6101 A2 7107 B3 9119 C4 9131 A5
1104 B1 2115 C1 2148 B4 3157 B5 5104 C2 5119 B5 6102 A1 7119 C4 9120 B4 9133 C3
1105 A1 2123 A2 2155 A3 3158 A5 5105 B2 5120 B4 6103 A1 9100 A2 9121 A2 9134 B3
1119 C5 2125 A2 2162 A2 3159 A5 5106 B2 5121 B4 6104 A2 9101 B3 9122 C3 9136 A5
1120 A5 2128 C3 3105 B3 3160 A5 5109 B4 5122 B3 6106 B3 9105 B2 9123 B1 9137 A5
1130 B5 2129 C4 3110 A2 3161 A5 5110 B4 5123 B2 6107 C5 9111 C2 9124 C4
1131 B5 2130 A4 3132 B3 3170 C5 5111 C3 5124 B2 6109 C2 9113 B2 9125 A3
2104 A2 2133 A4 3142 A4 3171 C5 5112 C4 5126 B3 6120 C4 9114 B2 9126 B5
2105 A1 2135 B5 3147 B5 3172 C5 5113 B3 5127 B4 7102 A3 9115 B3 9128 A2
1 2 3 4 5
ECO 5 TUNER BOARD / component side view
1 F C 4 3
VCC2 VCC RIGHT GND LEFT ENABLE DATA STEREO CLOCK DATA ENABLE MPX GND
A B C D
FM 75 OHM
FM 300 OHM
SW
AM FRAME AERIAL
FM-RF
FM-OSC
VCO
LW-OSC
MW-OSC
SW-OSC
DISCRIM-INATOR
SW-RF
SW-ANT
MW-RF
LW-RF
AM-IF1
AM-AFC
AM-IF2
SEARCH SENS
AM-IF
GND
+FM
R-FM
L-FM
L out
R out
VCOout
STSIG
STEREO
+Vs
Connector for AM - stereo Module
Voltage multiplier
VCC2
GND
VCC
This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.
marked components to be assembled as service solution for Local/DX - switching
2SA... BC...
B C E
ECO5 3396 stage. 2, 250698
1 2 3 4 5



TUNER ADJUSTMENT TABLE (ECO5 FM/MW- and FM/MW/LW - versions with AM-frame aerial)

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)			108MHz	5130		8V ±0.2V
			87.5MHz (65.81MHz)	check		4.3V ±0.5V (1.2V ±0.5V)
MW FM/AM-version, 10kHz grid 530 - 1700kHz			1700kHz	5123		8V ±0.2V
			530kHz	check		1.1V ±0.4V
FM/MW-version, 9kHz grid 531 - 1602kHz			1602kHz	5123	1	6.9V ±0.2V
			531kHz	check		1.1V ±0.4V
LW 153 - 279kHz			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
MW FM/MW/LW- version, 9kHz grid 531 - 1602kHz			1602kHz	5123		8V ±0.2V
			531kHz	check		1.1V ±0.4V
FM IF						
FM	10.7MHz, 50mV continuous wave	F	IC 7101 21 shortcircuit to block AFC 2141	5119	2	0 ± 3 mV DC
FM RF						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	108MHz	A	108MHz	2155	4	MAX
	87.5MHz (65.81MHz)	mod=1kHz Δf=±22.5kHz	87.5MHz (65.81MHz)	5131		
VCO						
FM	98MHz, 1mV continuous wave	A	98MHz	3142	3	152kHz ±1kHz [1]
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with short wire to ground (pin 4)	C	IC 7101 36 220R 100nF	5111	4	max. f_o symmetric
		Δf=±15kHz V_{RF} = 3mV	IC 7101 40 see remark [2] 220R 100nF	5112		
AM AFC **MW**		C continuous wave V_{RF} = 10mV		5114	2	0 ± 2 mV DC
AM RF [3]						
MW [4] FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz	1494kHz	B	1494kHz	2106	4	max. f_o symmetric
	558kHz		558kHz	5102		
LW	198kHz		198kHz	5103		
MW FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz	Δf = ±30kHz V_{RF} as low as possible	1500kHz	2106		
	560kHz		560kHz	5102		

ECO5, discr. coil, 090797

Use service test program. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

1) If sensitivity of frequency counter is too low adjust to max. channel separation (input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

2) RC network serves for damping the IF-filter while adjusting the other one.

3) For AM RF adjustments the original frame antenna has to be used !

4) MW has to be aligned before LW.

↕ Repeat

7B-3

TUNER BOARD ECO5 / Systems

VERSION PROGRAMMING COMPONENTS					
	6120	3156	3157	3170	remark
/00 FM/MW/LW	x	-	-	-	7111 not mounted
/00 FM/MW/LW/SW-Eu	-	-	-	-	
/01 FM/MW-Stereo	-	-	x	-	SW
/01 FM/MW	-	x	-	x	
/01 FM/MW/SW-Ov	-	x	-	-	
/06 FM-Japan/MW-stereo	-	-	-	x	
/13 FM/MW-Stereo	-	-	x	-	SW
/14 FM-OIRT/MW/LW	x	-	x	x	
/14 FM-OIRT/MW	x	-	x	-	
/17 FM/AM-Stereo	-	-	x	-	SW
/17 FM/AM	x	-	-	x	
/.. FM/MW/2xSW	-	-	x	x	
/15 FM/MW/SW-Eu	-	x	x	x	

x = component mounted
SW = Software initialisation

r....for RDS version only
s...for East European version (/14/34) only
t....for Japanese version (/06/26) only
u...for 2-band (FM/AM) version only
v...for SW-version 3.9-12.1MHz only
w...for LW only
x....not for all versions
y....for USA version (/17/37) only
z....for AM-STEREO (/06/13/26/33) versions only

Signal path: FM; AM; MPX (Audio Frequency); AF - left/right

Vdc FM mode stereo; Vdc MW mode; Vdc LW mode

Voltages measured while set is tuned to a strong transmitter

ECO5 systems, discr.coil, 030998

7B-4

ELECTRICAL PARTS LIST - ECO5 TUNER BOARD

ELECTRICAL PARTS LIST - ECO5 TUNER BOARD

MISCELLANEOUS

1101	4822 267 31505	Antenna Socket 300R	
1102	4822 267 10283	Antenna Socket Coax IEC 75R	

CAPACITORS

2101	5322 122 32531	100pF 5% 50V	
2101	4822 126 13692	47pF 1% 63V	for USA
2102	4822 122 33177	10nF 20% 50V	
2103	5322 122 34123	1nF 10% 50V	
2104	4822 122 33195	100pF 10% 50V	
2106	4822 125 50355	Trimmer 4-20pF	for LW version
2106	4822 125 60101	Trimmer 3-11pF 100V	
2107	4822 121 51319	1µF 10% 63V	
2108	5322 122 32531	100pF 5% 50V	for LW version
2109	5322 122 32448	10pF 5% 50V	for LW version
2120	4822 126 13691	27pF 1% 63V	for LW version
2120	5322 122 32658	22pF 5% 50V	
2122	4822 122 33891	3,3nF 10% 63V	for LW version
2125	4822 121 51381	560pF 5% 400V	
2126	5322 122 31863	330pF 5% 50V	
2127	4822 126 13473	220nF +80/-20% 50V	
2128	4822 124 41579	10µF 20% 50V	
2129	4822 124 41584	100µF 20% 10V	
2130	4822 126 11585	22nF+80/- 20% 25V	
2131	4822 122 33325	470nF 16V	
2131	4822 126 13482	470nF +80/- 20% 16V	
2132	4822 126 13482	470nF +80/- 20% 16V	
2133	4822 124 40242	1µF 20% 63V	
2134	4822 126 13188	15nF 5% 63V	
2134	5322 122 32654	22nF 10% 63V	for USA
2135	4822 124 40746	0,22µF 20% 63V	
2136	4822 126 13188	15nF 5% 63V	
2136	5322 122 32654	22nF 10% 63V	for USA
2137	4822 124 40746	0,22µF 20% 63V	
2138	4822 124 41576	2,2µF 20% 50V	
2139	4822 126 14236	50V 15pF 5%	
2140	4822 121 51252	470nF 5% 63V	
2141	4822 126 10002	100nF 20% 25V	
2142	4822 126 10002	100nF 20% 25V	
2143	4822 126 13473	220nF +80/-20% 50V	
2144	4822 124 40242	1µF 20% 63V	
2145	4822 122 33575	220pF 5% 50V	
2146	4822 122 33575	220pF 5% 50V	
2147	4822 122 33575	220pF 5% 50V	
2148	4822 126 11585	22nF+80/- 20% 25V	
2149	5322 122 32654	22nF 10% 63V	
2150	4822 122 31947	100nF 20% 63V	
2152	5322 116 80853	560pF 5% 63V	for East. Europe
2152	4822 126 12105	33nF 5% 63V	
2153	4822 122 32139	12pF 2% 63V	for East. Europe
2153	4822 122 32504	15pF 2% 63V	
2155	4822 125 60101	Trimmer 3-11pF 100V	
2158	5322 122 32448	10pF 5% 50V	for LW version
2159	5322 122 32659	33pF 5% 50V	
2160	5322 122 32654	22nF 10% 63V	
2161	4822 126 10002	100nF 20% 25V	
2163	4822 126 10002	100nF 20% 25V	
2164	4822 126 13482	470nF +80/- 20% 16V	
2165	4822 126 10002	100nF 20% 25V	
2166	5322 122 34123	1nF 10% 50V	
2167	4822 122 32139	12pF 2% 63V	
2168	4822 126 13695	82pF 1% 63V	

RESISTORS

3101	4822 051 20562	5k6 5% 0,1W	for East. Europe
3101	4822 051 20333	33k 5% 0,1W	
3102	4822 051 20104	100k 5% 0,1W	
3103	4822 117 10965	18k 1% 0,1W	
3104	4822 117 11448	180R 1% 0,1W	
3105	4822 116 83872	220R 5% 0,5W	
3108	4822 117 11449	2k2 1% 0,1W	for LW version
3109	4822 051 20472	4k7 5% 0,1W	for LW version
3110	4822 116 52195	47R 5% 0,5W	
3120	4822 051 20008	0R Jumper 0805	
3123	4822 051 20472	4k7 5% 0,1W	for LW version
3125	4822 117 10833	10k 1% 0,1W	for LW version
3128	4822 117 11449	2k2 1% 0,1W	for LW version
3132	4822 116 52195	47R 5% 0,5W	
3134	4822 051 20223	22k 5% 0,1W	
3137	4822 051 20223	22k 5% 0,1W	for LW version
3140	4822 051 20008	0R Jumper 0805	
		5120=CDA10.7MG40K	
3140	4822 117 10353	150R 1% 0,1W	
		5120=CDA10.7MG61KA	
3141	4822 051 20563	56k 5% 0,1W	
3142	4822 100 11163	Trimmer 100k 30% 0,1W	
3143	4822 051 20223	22k 5% 0,1W	for RDS version
3144	4822 051 10102	1k 2% 0,25W	for RDS version
3145	4822 117 11449	2k2 1% 0,1W	
3146	4822 051 20229	22R 5% 0,1W	
3152	4822 116 83883	470R 5% 0,5W	
3153	4822 051 20471	470R 5% 0,1W	
3154	4822 116 83868	150R 5% 0,5W	
3155	4822 051 20471	470R 5% 0,1W	
3156	4822 051 20104	100k 5% 0,1W	for /21/30/33 only
3157	4822 116 52234	100k 5% 0,5W	for East. Europe
3158	4822 116 83883	470R 5% 0,5W	
3159	4822 116 83883	470R 5% 0,5W	
3160	4822 116 83883	470R 5% 0,5W	
3161	4822 116 83883	470R 5% 0,5W	
3167	4822 117 11503	220R 1% 0.1W	
3169	4822 051 20154	150k 5% 0,1W	
3170	4822 116 52234	100k 5% 0,5W	
3171	4822 116 52219	330R 5% 0,5W	
3176	4822 051 10102	1k 2% 0,25W	for RDS version
3180	4822 051 20223	22k 5% 0,1W	for LW version
4101	4822 051 20008	0R Jumper 0805	for 2-Band only
4102	4822 051 20008	0R Jumper 0805	for 2-Band only
4103	4822 051 20008	0R Jumper 0805	
4104	4822 051 20008	0R Jumper 0805	
4105	4822 051 20008	0R Jumper 0805	
4106	4822 051 20008	0R Jumper 0805	
4108	4822 051 20008	0R Jumper 0805	
4111	4822 051 20008	0R Jumper 0805	
4120	4822 051 20008	0R Jumper 0805	
4150	4822 051 10008	0R Jumper 1206	
4151	4822 051 20008	0R Jumper 0805	
4152	4822 051 10008	0R Jumper 1206	
4153	4822 051 10008	0R Jumper 1206	
4154	4822 051 10008	0R Jumper 1206	
4155	4822 051 10008	0R Jumper 1206	
4156	4822 051 20008	0R Jumper 0805	
4157	4822 051 10008	0R Jumper 1206	
4158	4822 051 10008	0R Jumper 1206	
4159	4822 051 10008	0R Jumper 1206	
4162	4822 051 10008	0R Jumper 1206	

COILS & FILTERS

5102	4822 157 71634	MW RF Coil	
5103	4822 157 71635	LW RF Coil	for LW version
5109	4822 242 70665	Ceram Filter 10,7MHz	
5110	4822 242 70665	Ceram Filter 10,7MHz	
5111	4822 158 60511	AM-IF Filter 450kHz	
5112	4822 157 70302	AM-IF Filter 450kHz	
5114	4822 157 70302	AM-IF Filter 450kHz	
5119	4822 157 11443	Discriminator 10,7MHz	
5120	4822 242 82065	Cer. Disc. 10,7MG40K	
5120	4822 242 10251	Cer. Disc.10,7MG61KA-TF21	
5121	4822 242 10261	Quartz 75kHz	
5122	4822 157 60517	Osc. Coil LW	for LW version
5123	4822 157 60517	Osc. Coil MW	
5130	4822 156 30947	RF-Coil 1.5T	
5131	4822 156 30947	RF-Coil 1.5T	

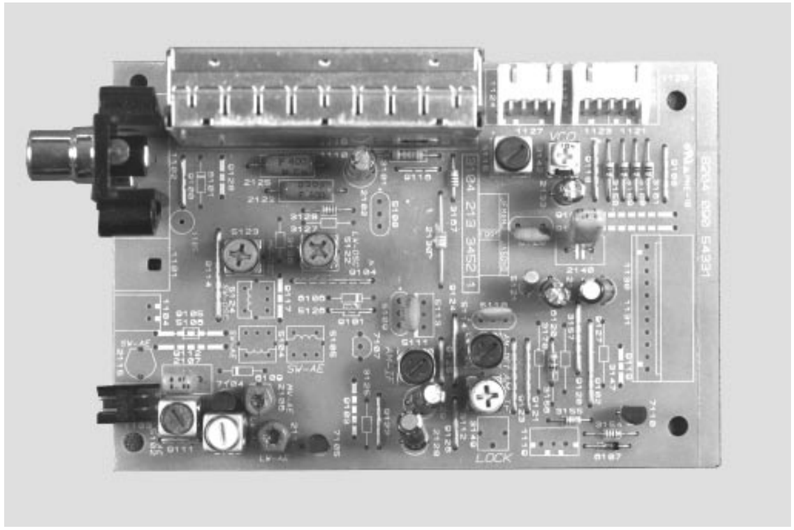
DIODES

6103	4822 130 30621	1N4148	
6104	4822 130 30621	1N4148	
6105	4822 130 83075	HN1V02H-B	
6106	4822 130 30621	1N4148	
6107	4822 130 34488	BZX79-B11	
6120	4822 130 30621	1N4148	not for /21/30/33
6130	4822 130 82833	1SV228	
6131	4822 130 82833	1SV228	

TRANSISTORS & INTEGRATED CIRCUITS

7101	4822 209 90924	TEA5757H/V1	
7102	4822 130 60093	2SA838B	
7103	4822 130 42513	BC858C	for RDS version
7104	5322 130 44779	BC338-40	for LW version
7105	5322 130 44779	BC338-40	for LW version
7109	5322 130 41983	BC858B	for LW version
7111	5322 130 42136	BC848C	
7122	5322 130 42136	BC848C	for LW version
7124	5322 130 42136	BC848C	for LW version

Note: Only the parts mentioned in this list are normal service spare parts.



TUNER 95 BOARD

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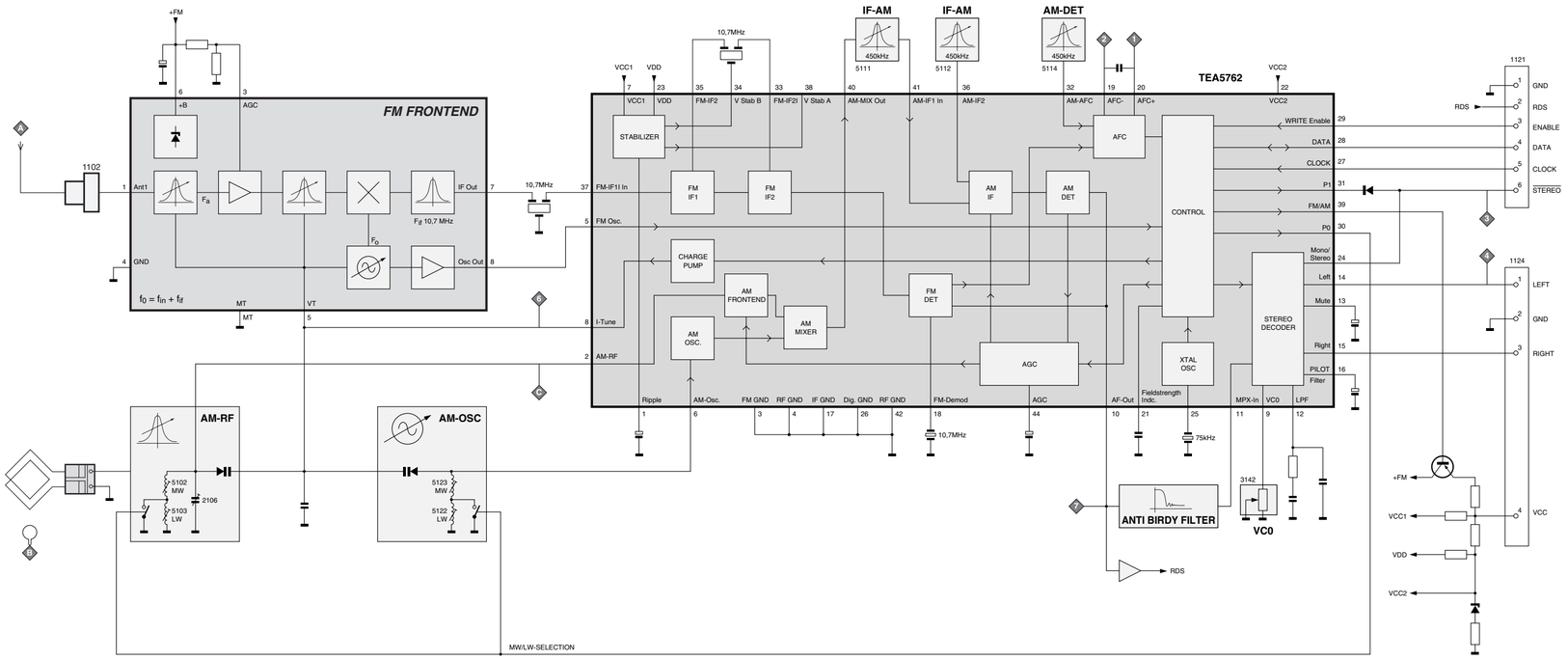
BLOCKDIAGRAM



TUNER 95 bis Adjustment Table (FM, MW, LW with Frame antenna)

Waverange	Input frequency	Input	Set tuned to	Adjust	Output	Scope / Voltmeter
VARICAP ALIGNMENT						
FM (50)			108 MHz	check		7 ... 9V
87.5 - 108 MHz			87.5 MHz	check		1.3 ... 2V
MW (9)			1602 kHz	5123	◇6	8.3V ± 0.2V
531 - 1602 kHz			531 kHz	check		1V ± 0.4V
LW (3)			279 kHz	5122		8.3V ± 0.2V
153 - 279 kHz			153 kHz	check		1V ± 0.4V
FM – DETECTION						
FM	98 MHz 1mV continuous wave *short pin 21 (IC7101) to ground*	◇A	98 MHz	5107	◇1 ◇2	0mV ± 3mV
FM – VCO						
FM	98 MHz 1 mV continuous wave	◇A	98 MHz	3142	◇3	152kHz ± 1 kHz
DISTORTION						
FM	98 MHz 1 mV 90 % L + 9 % pilot mod = 1kHz	◇A	98MHz	mixcoil inside Tuner 1110	◇4	Distortion minimum
AM – IF						
MW	450kHz Δf = 10kHz Low as possible Swept signal	100nF 50E	MW	5111	◇7	symmetrical and max. height
				5112		
	450kHz continuous wave	◇C		5114	◇1 ◇2	0mV ± 2mV
AM - RF						
MW	558kHz Mod = 1kHz 30 % AM 1494 kHz	◇B	558kHz	5102	◇7	MAX
			1494kHz	2106		
LW	198kHz mod = 1kHz 30 % AM	*	198kHz	5103		MAX

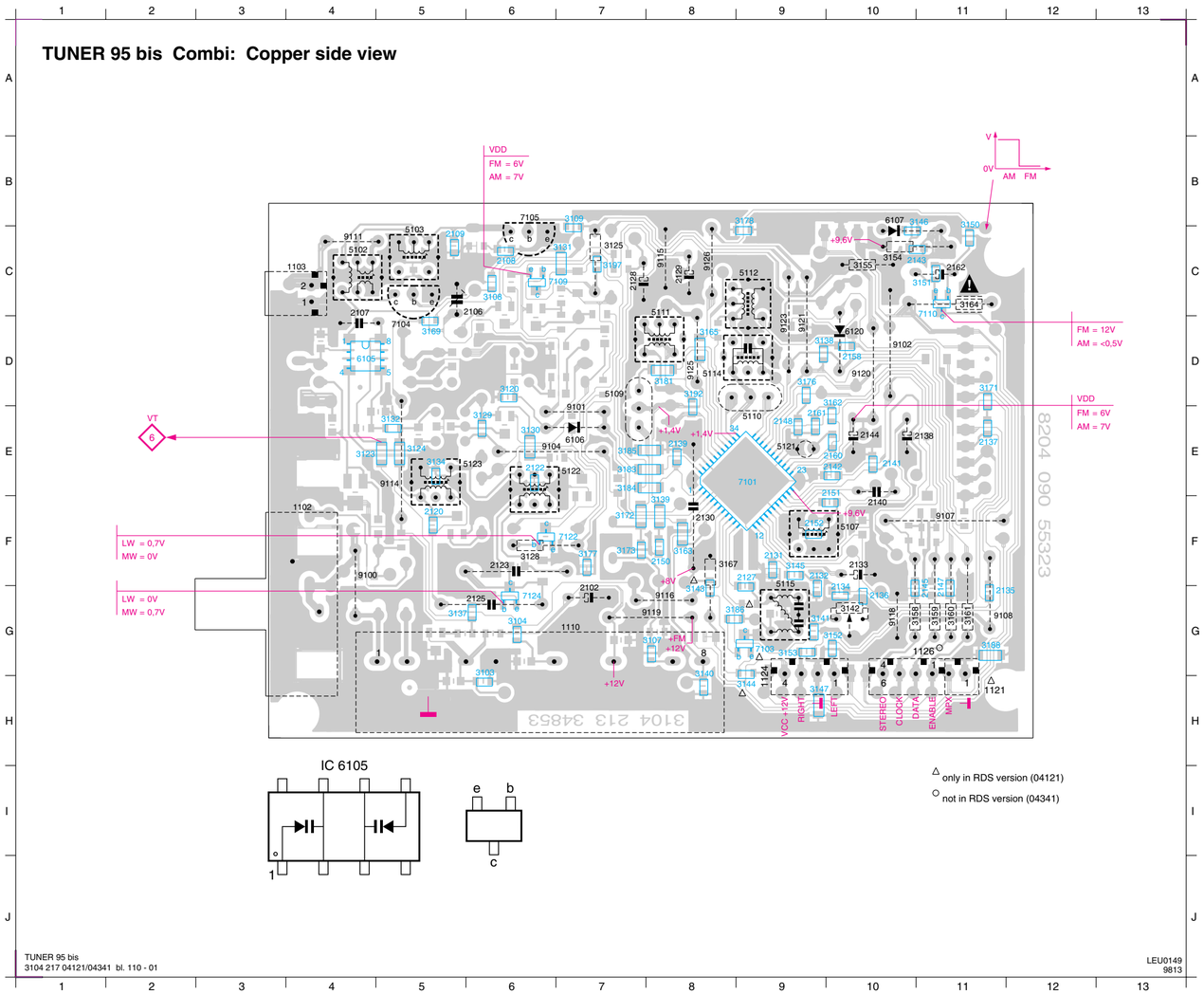
adjtable for 3104 217 04121/04341

* Signal send via a frame antenna
(..) = tuning grid in kHz

↕ repeat

7D-2

1102	F4	2107	C4	2128	C7	2136	G10	2144	E10	2160	E9	3120	D6	3132	E5	3143	G8	3153	G9	3163	F8	3176	D9	3188	G11	5111	C8	6106	E7	7110	D11	9108	G11	9121	D9
1103	C4	2108	C6	2129	C8	2137	E11	2145	G11	2161	E9	3123	E4	3134	E5	3144	H9	3154	C10	3164	C11	3177	F7	3192	D8	5112	C9	6107	B10	7122	F7	9111	C4	9123	D9
1110	G7	2109	C5	2130	F8	2138	E10	2147	G11	2162	C11	3124	E5	3137	G5	3145	F9	3155	C10	3165	D8	3178	B8	3197	C7	5114	D8	6120	D10	7124	G6	9114	E5	9125	D8
1121	H11	2120	F5	2131	F9	2139	E8	2148	E9	3103	H6	3125	C7	3138	D9	3146	B10	3158	G11	3167	F8	3181	D8	5102	C4	5115	G9	7101	E9	9100	F4	9115	C8	9126	C8
1124	H9	2122	E6	2132	F9	2140	F10	2150	F8	3104	G6	3128	F6	3139	F8	3147	H9	3159	G11	3169	D5	3183	E7	5103	C5	5121	E9	7103	G9	9101	E7	9116	G8		
1126	G10	2123	F6	2133	F10	2141	E10	2151	F9	3107	G7	3129	E6	3140	H8	3150	C11	3160	G11	3171	D11	3184	E7	5107	F10	5122	E7	7104	D5	9102	D10	9118	G10		
2102	G7	2125	G6	2134	G10	2142	E9	2152	F9	3108	C6	3130	E6	3141	G9	3151	C10	3161	G11	3172	F7	3185	E7	5109	D7	5123	E5	7105	B6	9104	E6	9119	G7		
2106	C5	2127	F9	2135	G11	2143	C10	2158	D10	3109	B7	3131	C6	3142	G10	3152	G9	3162	D9	3173	F7	3186	G8	5110	E9	6105	D4	7109	C6	9107	F11	9120	D10		



7D-3

| | | |

7D-4

ELECTRICAL PARTS LIST - TUNER 95 BOARD

ELECTRICAL PARTS LIST - TUNER 95 BOARD

MISCELLANEOUS

1102	4822 267 10283	Socket Coaxial IEC 75R
1103	4822 265 31184	JST Connector 2 pin
1110	4822 210 10739	Frontend Assembly FE415-G23

CAPACITORS

2102	4822 124 40433	47µF 20% 25V
2106	4822 125 60102	Trimmer 5,2-30pF 100V
2107	4822 121 51252	470nF 5% 63V
2108	4822 126 13695	82pF 1% 63V
2109	4822 126 13691	27pF 1% 63V
2120	5322 122 32659	33pF 5% 50V
2122	5322 126 10465	3,9nF 10% 50V
2123	4822 121 10766	390pF 1% 630V
2125	4822 121 10578	560pF 1% 630V
2127	4822 122 32927	220nF +80/-20% 50V
2128	4822 124 41579	10µF 20% 50V
2129	4822 124 40242	1µF 20% 63V
2130	4822 126 11585	22nF +80/-20% 25V
2131	4822 122 33325	470nF 16V
2132	4822 122 33325	470nF 16V
2133	4822 124 40242	1µF 20% 63V
2134	4822 126 13188	15nF 5% 63V
2135	4822 122 32927	220nF +80/-20% 50V
2136	4822 126 13188	15nF 5% 63V
2137	4822 122 32927	220nF +80/-20% 50V
2138	4822 124 41576	2,2µF 20% 50V
2139	4822 126 10002	100nF 20% 25V
2140	4822 121 51252	470nF 5% 63V
2141	4822 122 31947	100nF 20% 63V
2142	4822 122 31947	100nF 20% 63V
2143	4822 122 32927	220nF +80/-20% 50V
2144	4822 124 40242	1µF 20% 63V
2145	4822 122 33575	220pF 5% 50V
2147	4822 122 33575	220pF 5% 50V
2148	4822 122 33809	22nF 20% 50V
2150	4822 122 31947	100nF 20% 63V
2151	4822 126 14236	15pF 5% 50V
2152	4822 126 13695	82pF 1% 63V
2158	4822 122 31947	100nF 20% 63V
2160	4822 122 32139	12pF 2% 63V
2161	5322 122 34123	1nF 10% 50V
2162	4822 124 81151	22µF 50V

RESISTORS

3103	4822 051 20008	0R Jumper 0805
3104	4822 051 10102	1k 2% 0,25W
3107	4822 051 20829	82R 5% 0,1W
3108	4822 117 11449	2k2 1% 0,1W
3109	4822 117 11449	2k2 1% 0,1W
3120	4822 051 20008	0R Jumper 0805
3123	4822 051 10008	0R Jumper 1206
3124	4822 051 10008	0R Jumper 1206
3125	4822 116 83864	10k 5% 0,5W
3128	4822 116 52256	2k2 5% 0,5W
3129	4822 051 20008	0R Jumper 0805
3130	4822 051 10008	0R Jumper 1206
3131	4822 051 10008	0R Jumper 1206
3132	4822 051 20008	0R Jumper 0805
3134	4822 051 20223	22k 5% 0,1W
3137	4822 117 10833	10k 1% 0,1W
3138	4822 051 20008	0R Jumper 0805
3139	4822 051 10008	0R Jumper 1206
3140	4822 051 20331	330R 5% 0,1W
3141	4822 117 11148	56k 1% 0,1W
3142	4822 100 11163	Trimmer 100k 30% 0,1W
3143	4822 051 20223	22k 5% 0,1W
3144	4822 051 10102	1k 2% 0,25W
3145	4822 117 11449	2k2 1% 0,1W
3146	4822 051 20479	47R 5% 0,1W
3147	4822 051 10008	0R Jumper 1206
3150	4822 051 20472	4k7 5% 0,1W
3151	4822 051 20683	68k 5% 0,1W
3152	4822 051 20471	470R 5% 0,1W
3153	4822 051 20471	470R 5% 0,1W
3154	4822 116 83872	220R 5% 0,5W
3155	4822 116 52219	330R 5% 0,5W
3158	4822 116 83883	470R 5% 0,5W
3159	4822 116 83883	470R 5% 0,5W
3160	4822 116 83883	470R 5% 0,5W
3161	4822 116 83883	470R 5% 0,5W
3162	4822 117 13579	220k 1% 0,1W
3163	4822 051 10008	0R Jumper 1206
3164	4822 052 10478 ⚠	4R7 5% 0,33W
3165	4822 051 10008	0R Jumper 1206
3167	4822 116 83872	220R 5% 0,5W
3169	4822 051 20008	0R Jumper 0805
3171	4822 051 20008	0R Jumper 0805
3172	4822 051 10008	0R Jumper 1206
3173	4822 051 20008	0R Jumper 0805
3176	4822 051 20008	0R Jumper 0805
3177	4822 051 20223	22k 5% 0,1W
3178	4822 051 10008	0R Jumper 1206
3181	4822 051 10008	0R Jumper 1206
3183	4822 051 10008	0R Jumper 1206
3184	4822 051 10008	0R Jumper 1206
3185	4822 051 10008	0R Jumper 1206
3186	4822 051 10102	1k 2% 0,25W
3188	4822 051 10008	0R Jumper 1206
3192	4822 051 20008	0R Jumper 0805
3197	4822 051 20472	4k7 5% 0,1W

COILS & FILTERS

5102	4822 157 71634	MW Aerial
5103	4822 157 71635	LW Aerial
5107	4822 157 11443	FM Discriminator 10,7MHz
5109	4822 157 71639	Ceram Filter 10,7MHz
5110	4822 242 70665	Ceram Filter 10,7MHz
5111	4822 158 60511	AM-IF Filter 450kHz
5112	4822 157 70302	AM-IF Filter 450kHz
5114	4822 157 70302	AM_IF Filter 450kHz
5115	4822 157 71636	Anti-Birdy Filter
5121	4822 242 10261	X'tal Resonator 75kHZ
5122	4822 157 60517	RF Coil AM
5123	4822 157 60517	RF Coil AM

DIODES

6105	4822 130 83075	HN1V02H-B
6106	4822 130 30621	1N4148
6107	4822 130 34488	BZX79-C11
6120	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7101	4822 209 90315	TEA5762H/V1
7103	4822 130 42513	BC858C
7104	5322 130 44779	BC338-40
7105	5322 130 44779	BC338-40
7109	5322 130 41983	BC858B
7110	5322 130 41983	BC858B
7122	5322 130 42136	BC848C
7124	5322 130 42136	BC848C

Note : Only the parts mentioned in this list are normal service spare parts.

ECO MTF MODULE

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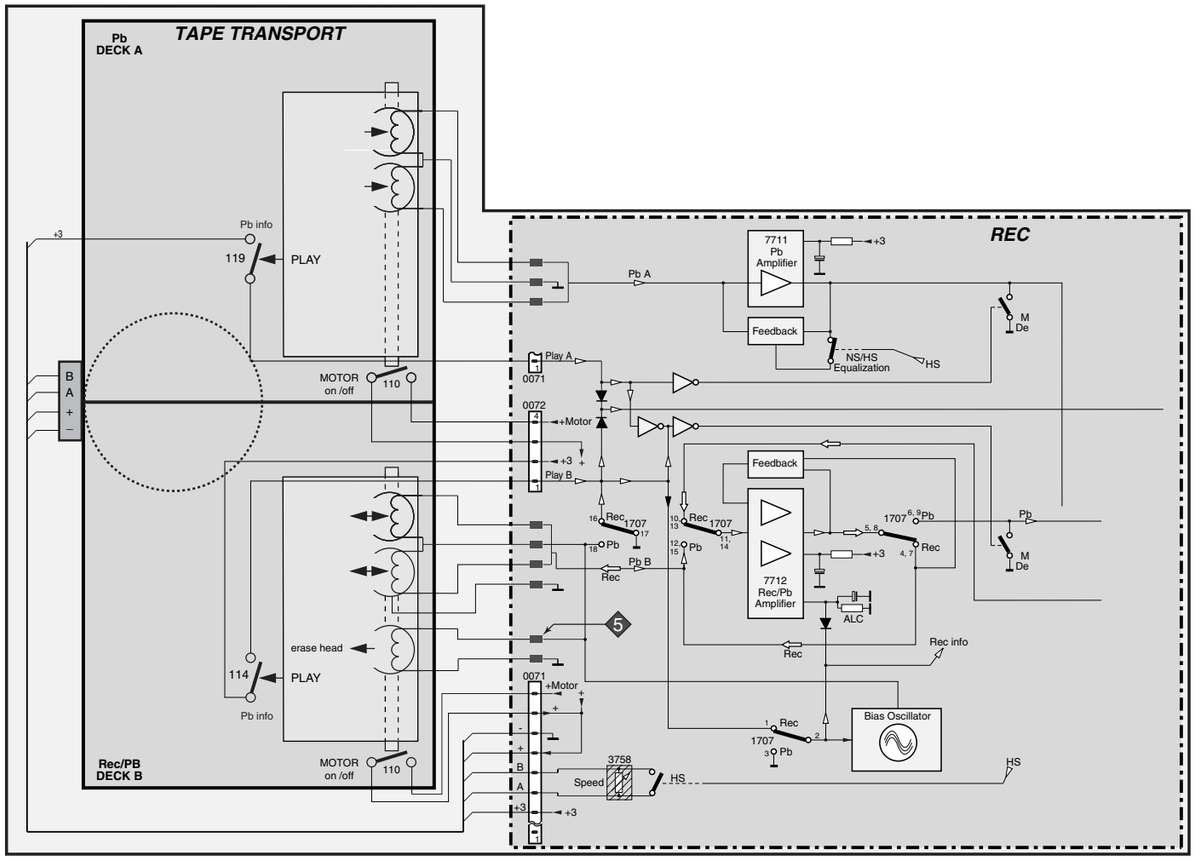
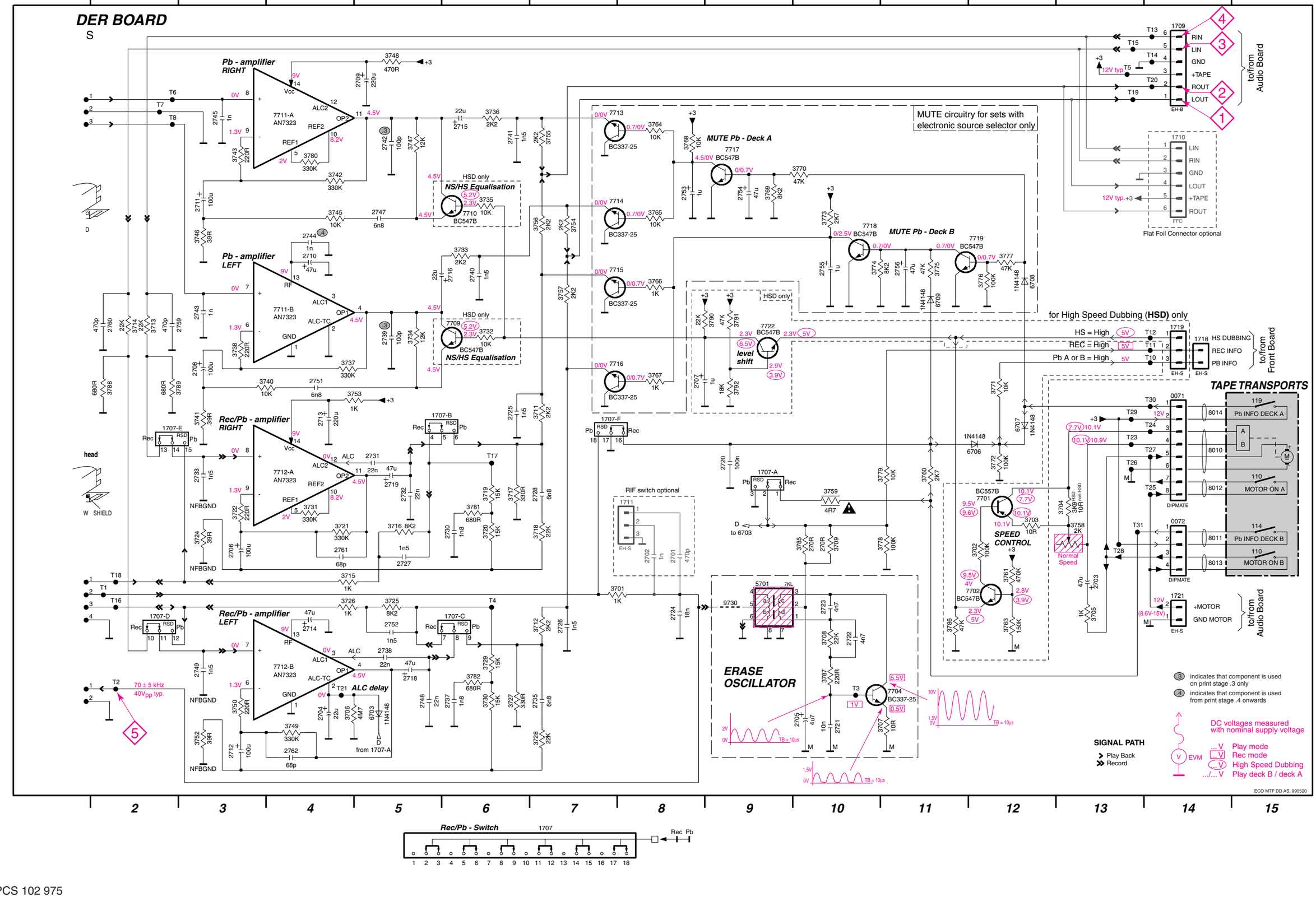
BLOCKDIAGRAM

RECORDER MODULE *ECO MTF-AS-DD-ES*

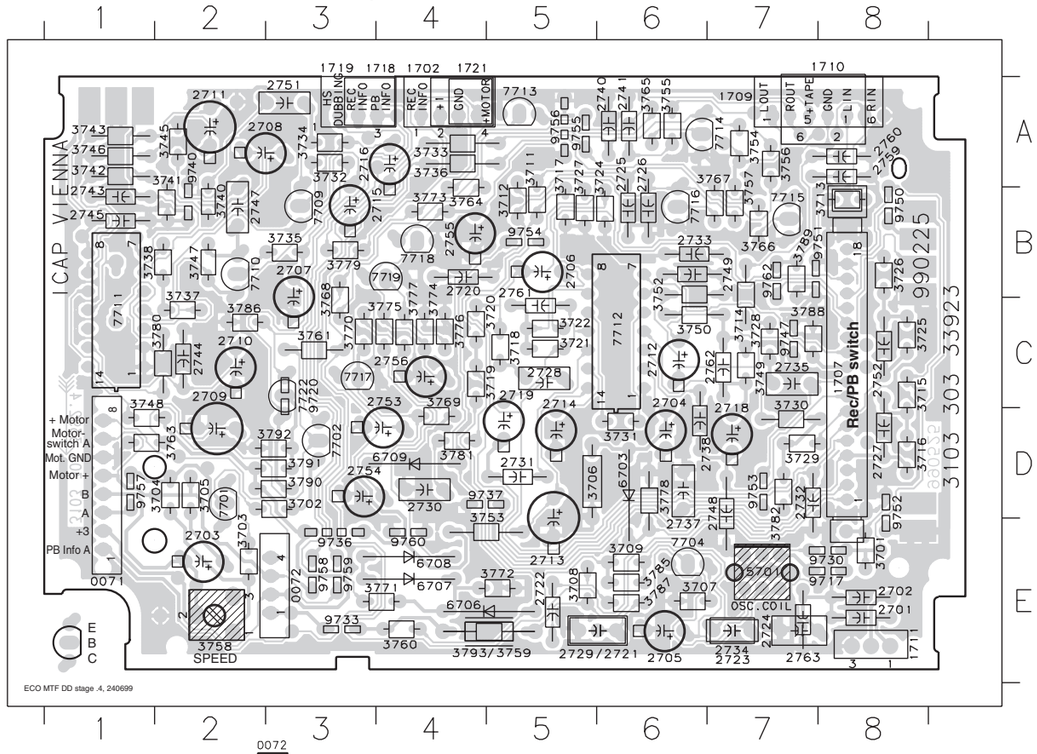


9-2

F E7 A14 B14 D14 G14 D14 G8
2702 G8 2703 G13 2704 I4 2705 I10 2706 G3 2707 E8 2708 E3
2709 A5 2710 C4 2711 C3 2712 I3 2713 E4 2714 H4 2715 B6
2716 D6 2718 H5 2719 F5 2720 F9 2721 I10 2722 H10 2723 G10
2724 G8 2725 E6 2726 H7 2727 G5 2728 F7 2730 F6 2731 F5
2732 F5 2733 F3 2735 H7 2737 H6 2738 H5 2739 D5 2740 D6
2741 B6 2742 B5 2743 D3 2744 C4 2745 B3 2747 C5 2748 H5
2749 H3 2751 E4 2752 H5 2753 C8 2754 C9 2755 C10 2756 C11
2759 D2 2760 D2 2761 G4 2762 I4 3701 G8 3702 G12 3703 F12
3704 F13 3705 G13 3706 I4 3707 I11 3708 H10 3709 G10 3711 E7
3712 H7 3713 D2 3714 D2 3715 G4 3716 F5 3717 F6 3718 F7
3719 F6 3720 F6 3721 F4 3722 F3 3724 G3 3725 G5 3726 G4
3727 H6 3728 I7 3729 H6 3730 H6 3731 F4 3732 D6 3733 C6
3734 D5 3735 C6 3736 B6 3737 E4 3738 D3 3740 E4 3741 E3
3742 B4 3743 B3 3745 C4 3746 C3 3747 B5 3748 A5 3749 I4
3750 H3 3752 I3 3753 E5 3754 C7 3755 B7 3756 C7 3757 D7
3758 F13 3759 F10 3760 F11 3761 G12 3763 H12 3764 B8 3765 C8
3766 D8 3767 E8 3768 B8 3769 C9 3770 B10 3771 E12 3772 F12
3773 C10 3774 C10 3775 D11 3776 D12 3777 C12 3778 G11 3779 F11
3780 B4 3781 F6 3782 H6 3785 G10 3787 H10 3788 E2
3789 E2 3790 D9 3791 D9 3792 E9 5701 G9 6703 I5 6706 F12
6707 E12 6708 D12 6709 D11 7701 F12 7702 G12 7704 H11 7709 D6
7710 C6 7711-A B4 7711-B D4 7712-A F4 7712-B H4 7713 B8 7714 C8
7715 C8 7716 E8 7717 B9 7718 C10 7719 C12 9730 F9 9730 G9



RECORDER BOARD / componentside view

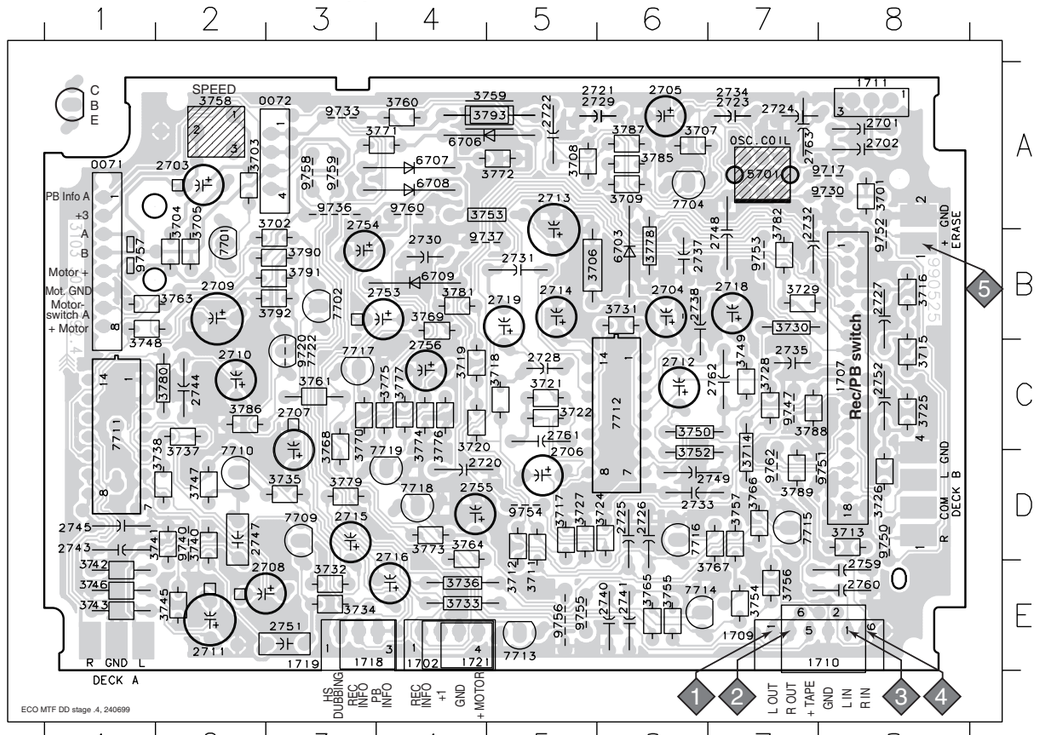


0071 E1 2744 C2 3735 B3 3789 B7
0072 E3 2745 A1 3736 A4 3790 D3
1702 A5 2747 B2 3737 B2 3791 D3
1707 B8 2748 D7 3738 B2 3792 D3
1709 A7 2749 B7 3740 B2 3793 E4
1710 A7 2751 A3 3741 A2 5701 E7
1711 E8 2752 C8 3742 B1 6703 D6
1719 A3 2753 D4 3743 B1 6706 E4
1721 A4 2754 D4 3745 A2 6707 E4
2701 E8 2755 B4 3746 A1 6708 E4
2702 E8 2756 C4 3747 B2 6709 D4
2703 E2 2759 A8 3748 C1 7701 D2
2704 C6 2760 A8 3749 C7 7702 D3
2705 E6 2761 B5 3750 C6 7704 E6
2706 B5 2762 C7 3752 B6 7709 B3
2707 B3 2763 E7 3753 D5 7710 B2
2708 A3 3701 E8 3754 A7 7711 C1
2709 D2 3702 D3 3755 A6 7712 B6
2710 C2 3703 E2 3756 A7 7713 A5
2711 A2 3704 D2 3757 B7 7714 A7
2712 C6 3705 D2 3758 E2 7715 B7
2713 E5 3706 D6 3759 E5 7716 B6
2714 D5 3707 E6 3760 E4 7717 C3
2715 B4 3708 E5 3761 C3 7718 B4
2716 A3 3709 E6 3763 D2 7719 B4
2718 D7 3711 A5 3764 B4 7722 C3
2719 D5 3712 B5 3765 A6 9717 E8
2720 B4 3713 B8 3766 B7 9720 C3
2721 E6 3714 C7 3767 A7 9730 E7
2722 E5 3715 C8 3768 C3 9733 E3
2723 E7 3716 D8 3769 C4 9736 E3
2724 E7 3717 B5 3770 C3 9737 D4
2725 A6 3718 C5 3771 E4 9740 B2
2726 A6 3719 C5 3772 E5 9747 C7
2727 D8 3720 C5 3773 B4 9750 B8
2728 C5 3721 C5 3774 C4 9751 B8
2729 E5 3722 C5 3775 C4 9752 D8
2730 D4 3724 A5 3776 C4 9753 D7
2731 D5 3725 C8 3777 C4 9754 B5
2732 D7 3726 B8 3778 D6 9755 A5
2733 B6 3727 A5 3779 B3 9756 A5
2734 E7 3728 C7 3780 C1 9757 D1
2735 C7 3729 D7 3781 D4 9758 E3
2737 E6 3730 C7 3782 E7 9759 E3
2738 D7 3731 D6 3785 E6 9760 E4
2740 A5 3732 A3 3786 C2 9762 B7
2741 A6 3733 A4 3787 E6
2743 A1 3734 A3 3788 C7

0072
+Motor
Motor-Switch B
+3
Pb Info B

These assembly drawings show a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

RECORDER BOARD / copperside view



0071 B1 2744 C2 3735 D3 3789 D7
0072 A3 2745 E1 3736 E4 3790 B3
1702 E4 2747 D2 3737 D2 3791 B2
1707 B8 2748 B7 3738 D2 3792 B3
1709 E8 2749 D6 3740 D2 3793 A5
1710 E8 2751 E3 3741 D1 5701 A7
1711 A8 2752 C8 3742 E1 6703 B6
1719 E3 2753 B4 3743 E1 6706 A4
1721 E4 2754 B3 3745 E2 6707 A4
2701 A8 2755 D5 3746 D1 6708 A4
2702 A8 2756 C4 3747 D2 6709 B4
2703 A2 2759 E8 3748 C1 7701 B2
2704 C6 2760 E8 3749 C7 7702 B3
2705 A6 2761 D5 3750 C6 7704 A6
2706 D5 2762 C7 3752 D6 7709 D3
2707 C3 2763 A7 3753 A4 7710 D2
2708 E3 3701 A8 3754 E7 7711 C1
2709 B2 3702 A3 3755 E6 7712 C6
2710 C2 3703 A2 3756 E7 7713 E5
2711 E2 3704 B2 3757 E7 7714 E7
2712 C6 3705 B2 3758 A2 7715 D7
2713 A5 3706 B5 3759 A5 7716 D6
2714 B5 3707 A6 3760 A4 7717 C3
2715 D4 3708 A5 3761 C3 7718 D4
2716 D4 3709 A6 3763 B2 7719 D4
2718 B7 3711 E5 3764 E4 7722 C3
2719 B5 3712 E5 3765 E6 9717 A8
2720 D4 3713 D8 3766 D7 9720 C3
2721 A6 3714 C7 3767 E7 9730 A7
2722 A5 3715 B8 3768 C3 9733 A3
2723 A7 3716 B8 3769 C4 9736 A3
2724 A7 3717 E5 3770 C3 9737 B4
2725 D6 3718 C5 3771 A4 9740 D2
2726 E6 3719 C5 3772 A5 9747 C7
2727 B8 3720 D4 3773 D4 9750 E8
2728 C5 3721 C5 3774 D4 9751 D8
2729 A6 3722 C5 3775 C4 9752 B8
2730 B4 3724 E6 3776 C4 9753 B7
2731 B5 3725 C8 3777 C4 9754 D5
2732 B7 3726 D8 3778 B6 9755 E6
2733 D6 3727 D5 3779 D3 9756 E5
2734 A7 3728 C7 3780 C2 9757 B1
2735 C7 3729 B7 3781 B4 9758 A3
2737 B6 3730 C7 3782 A7 9759 A3
2738 B7 3731 B5 3785 A6 9760 A4
2740 E6 3732 E3 3786 C2 9762 D7
2741 E6 3733 E4 3787 A6
2743 E1 3734 E3 3788 C8

RECORDER ADJUSTMENT TABLE

	TEST CASSETTE	RECORDER MODE	MEASURE ON	READ ON	ADJ with
General					
ADJUST MOTOR SPEED	SBC420 (4822 397 30071) 3150Hz	PLAY deck A or B	◇1 or ◇2 LEFT RIGHT or headphone socket	frequency counter	3758
CHECK WOW & FLUTTER	SBC420 (4822 397 30071) 3150Hz	PLAY deck A or B	◇1 or ◇2 LEFT RIGHT or headphone socket	W&F-meter	check only
ADJUST AZIMUTH	SBC420 (4822 397 30071) 10kHz	PLAY deck A PLAY deck B	◇1 ◇2 LEFT RIGHT or headphone socket	mV-meter or oscilloscope	left hand screw
Playback					
CHECK PLAYBACK FREQUENCY RESPONSE	SBC420 (4822 397 30071)	PLAY deck A PLAY deck B	◇1 or ◇2 LEFT RIGHT	mV-meter	Check
Recording					
PRE-ADJUST BIAS	FERRO	RECORD	◇5	mV-meter	5701
CHECK OVERALL FREQUENCY RESPONSE Input signal: 3mV 100Hz, 250Hz, 1kHz, 10kHz via ◇3 or ◇4	FERRO	RECORD			
	RECORDED CASSETTE	PLAY	◇1 or ◇2 LEFT RIGHT	mV-meter	check only
CHECK DISTORTION Input signal: 300mV 1kHz via ◇3 or ◇4	FERRO	RECORD			
	RECORDED CASSETTE	PLAY	◇1 or ◇2 LEFT RIGHT	THD-meter	check only

Remark: If high frequencies are not within lower limit, decrease bias and re-measure.
If distortion is too high increase bias and re-measure.

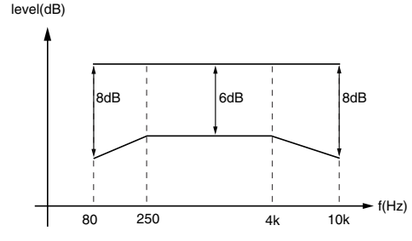


figure. 1

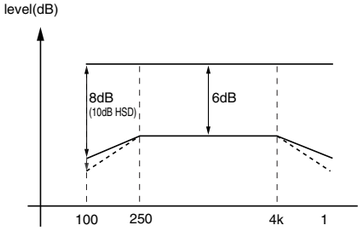
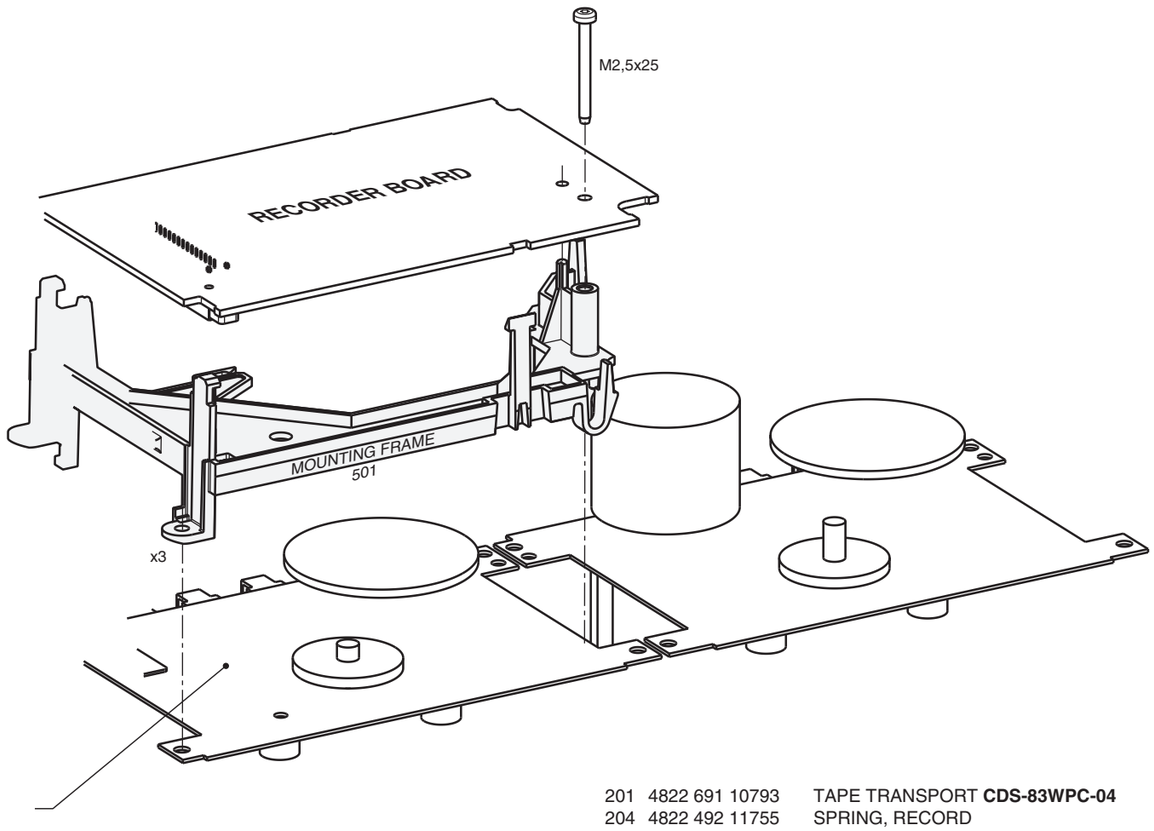
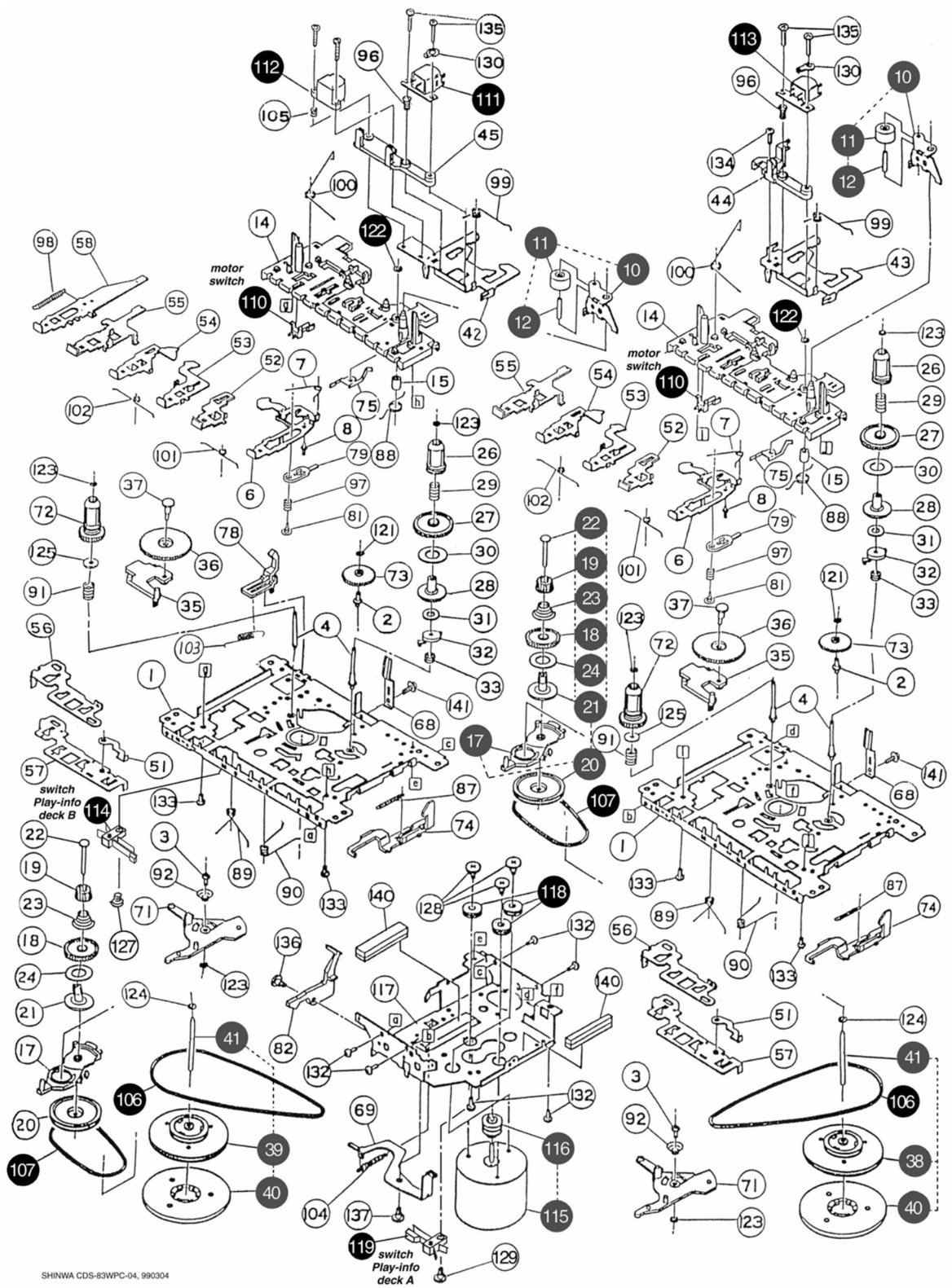


figure. 2

9-4

EXPLODED VIEW / RECORDER MODULE





201	4822 691 10793	TAPE TRANSPORT **CDS-83WPC-04**
204	4822 492 11755	SPRING, RECORD

Only those parts of which a service code number is stated are normal service parts.

MECHANICAL PARTSLIST *TAPE TRANSPORT*

10-12	4822 528 11189	PINCH ROLLER ASSY
17-24	4822 402 10966	CLUTCH ASSY
38-41	4822 528 11242	FLYWHEEL ASSY, PB DECK
39-41	4822 528 11243	FLYWHEEL ASSY, REC/PB DECK
106	4822 358 31225	MAIN BELT
107	4822 358 31124	SUB BELT
110	4822 278 90663	LEAF SWITCH, MOTOR ON/OFF
111	4822 249 10565	REC/PB-HEAD, TC951-B
112	4822 249 10548	ERASE HEAD, LE15B-C1
113	4822 249 10565	REC/PB-HEAD, TC951-B
114	4822 277 11754	LEAF SWITCH, INDICAT. „PLAY“ REC/PB-DECK
115/116	4822 361 11053	MOTOR ASSY, EG530YD-2BH + PULLEY
118	4822 466 11787	MOTOR CUSHION
119	4822 277 11753	LEAF SWITCH, INDICAT. „PLAY“ PB-DECK
122	4822 532 12937	WASHER, 1.6X3.5X0.4

Only those parts of which a service code number is stated are normal service parts.

ELECTRICAL PARTS LIST - ECO MTF BOARD

MISCELLANEOUS

1707	4822 277 11504	SWITCH SLIDE, REC/PB	
1710	4822 265 11207	FFC-SOCKET 6P, SIDE ENTRY (not on all versions)	

CAPACITORS

2703	4822 124 40433	47µF	20%	25V	
2704	4822 124 81151	22µF	20%	50V	
2705	4822 124 40769	4,7µF	20%	100V	
2706	4822 124 41584	100µF	20%	10V	
2707	4822 124 40242	1µF	20%	63V	HSD only
2708	4822 124 41584	100µF	20%	10V	
2709	4822 124 40196	220µF	20%	16V	
2710	4822 124 40433	47µF	20%	25V	
2711	4822 124 23432	100µF	20%	10V	
2712	4822 124 41584	100µF	20%	10V	
2713	4822 124 40196	220µF	20%	16V	
2714	4822 124 40433	47µF	20%	25V	
2715	4822 124 81151	22µF	20%	50V	
2716	4822 124 81151	22µF	20%	50V	
2718	4822 124 40433	47µF	20%	25V	
2719	4822 124 40433	47µF	20%	25V	
2720	4822 126 12882	100nF	20%	50V	
2721	4822 121 41857	10nF	5%	250V	
2722	4822 126 11714	4,7nF	20%	16V	
2723	4822 121 10686	4,7nF	10%	50V	
2724	4822 121 43179	18nF	5%	63V	
2725	4822 126 12878	1,5nF	10%	16V	
2726	4822 126 12878	1,5nF	10%	16V	
2727	4822 126 12878	1,5nF	10%	16V	
2728	4822 121 10746	6,8nF	10%	50V	
2730	4822 121 10685	1,8nF	10%	50V	
2731	4822 126 11585	22nF	20%	50V	
2732	4822 126 11585	22nF	20%	50V	
2733	4822 126 12878	1,5nF	10%	16V	
2735	4822 121 10746	6,8nF	10%	50V	
2737	4822 121 10685	1,8nF	10%	50V	
2738	4822 126 11585	22nF	20%	50V	
2739	4822 122 33195	100pF	10%	50V	.3 only
2740	4822 126 12878	1,5nF	10%	16V	
2741	4822 126 12878	1,5nF	10%	16V	
2742	4822 122 33195	100pF	10%	50V	.3 only
2743	4822 122 33197	1nF	10%	50V	
2744	4822 122 33197	1nF	10%	50V	.4 onwards
2745	4822 122 33197	1nF	10%	50V	
2747	4822 121 10746	6,8nF	10%	50V	
2748	4822 126 11585	22nF	20%	50V	
2749	4822 126 12878	1,5nF	10%	16V	
2751	4822 121 10746	6,8nF	10%	50V	
2752	4822 126 12878	1,5nF	10%	16V	
2753	4822 124 40242	1µF	20%	63V	
2754	4822 124 40433	47µF	20%	25V	
2755	4822 124 40242	1µF	20%	63V	
2756	4822 124 40433	47µF	20%	25V	
2759	4822 122 33519	470pF	10%	50V	
2760	4822 122 33519	470pF	10%	50V	
2761	4822 126 10329	68pF	10%	50V	
2762	4822 126 10329	68pF	10%	50V	

RESISTORS

3701	4822 050 11002	1kΩ	5%	0,2W	
3702	4822 116 52234	100kΩ	5%	0,5W	HSD only
3703	4822 116 52176	10Ω	5%	0,5W	HSD only
3704	4822 116 52176	10Ω	5%	0,5W	Normal Speed only
3704	4822 116 52276	3,9kΩ	5%	0,5W	HSD only
3705	4822 050 11002	1kΩ	5%	0,2W	
3706	4822 050 24705	4,7MΩ	1%	0,6W	
3707	4822 116 52176	10Ω	5%	0,5W	
3708	4822 116 52257	22kΩ	5%	0,5W	
3709	4822 116 83876	270Ω	5%	0.16W	
3711	4822 116 52256	2,2kΩ	5%	0,16W	
3712	4822 116 52256	2,2kΩ	5%	0,16W	
3713	4822 116 52257	22kΩ	5%	0,5W	
3714	4822 116 52257	22kΩ	5%	0,5W	
3715	4822 050 11002	1kΩ	5%	0,2W	
3716	4822 116 52303	8,2kΩ	5%	0,5W	
3717	4822 116 52219	330Ω	5%	0,5W	
3718	4822 116 52257	22kΩ	5%	0,5W	
3719	4822 116 52244	15kΩ	5%	0,5W	
3720	4822 116 52244	15kΩ	5%	0,5W	
3721	4822 116 52272	330kΩ	5%	0,5W	
3722	4822 116 83872	220Ω	5%	0,5W	
3724	4822 116 52193	39Ω	5%	0,16W	
3725	4822 116 52303	8,2kΩ	5%	0,5W	
3726	4822 050 11002	1kΩ	5%	0,2W	
3727	4822 116 52219	330Ω	5%	0,5W	
3728	4822 116 52257	22kΩ	5%	0,5W	
3729	4822 116 52244	15kΩ	5%	0,5W	
3730	4822 116 52244	15kΩ	5%	0,5W	
3731	4822 116 52272	330kΩ	5%	0,5W	
3732	4822 116 83864	10kΩ	5%	0,5W	HSD only
3733	4822 116 52256	2,2kΩ	5%	0,16W	
3734	4822 116 52238	12kΩ	5%	0,5W	
3735	4822 116 83864	10kΩ	5%	0,5W	HSD only
3736	4822 116 52256	2,2kΩ	5%	0,16W	
3737	4822 116 52272	330kΩ	5%	0,5W	
3738	4822 116 83872	220Ω	5%	0,5W	
3740	4822 116 83864	10kΩ	5%	0,5W	
3741	4822 116 52193	39Ω	5%	0,16W	
3742	4822 116 52272	330kΩ	5%	0,5W	
3743	4822 116 83872	220Ω	5%	0,5W	
3745	4822 116 83864	10kΩ	5%	0,5W	
3746	4822 116 52193	39Ω	5%	0,16W	
3747	4822 116 52238	12kΩ	5%	0,5W	
3748	4822 116 83883	470Ω	5%	0,16W	

ELECTRICAL PARTS LIST - ECO MTF BOARD

RESISTORS

3749	4822 116 52272	330kΩ	5%	0,5W	
3750	4822 116 83872	220Ω	5%	0,5W	
3752	4822 116 52193	39Ω	5%	0,16W	
3753	4822 050 11002	1kΩ	5%	0,2W	
3754	4822 116 52256	2,2kΩ	5%	0,16W	
3755	4822 116 52256	2,2kΩ	5%	0,16W	
3756	4822 116 52256	2,2kΩ	5%	0,16W	
3757	4822 116 52256	2,2kΩ	5%	0,16W	
3758	4822 100 11368	2kΩ		TRIMPOT. LIN.	
3759 ⚠	4822 052 10478	4,7Ω	5%	NFR	
3760	4822 116 52263	2,7kΩ	5%	0,5W	
3761	4822 116 52285	470kΩ	5%	0,5W	HSD only
3763	4822 116 52245	150kΩ	5%	0,16W	HSD only
3764	4822 116 83864	10kΩ	5%	0,5W	
3765	4822 116 83864	10kΩ	5%	0,5W	
3766	4822 050 11002	1kΩ	5%	0,2W	
3767	4822 050 11002	1kΩ	5%	0,2W	
3768	4822 116 83864	10kΩ	5%	0,5W	
3769	4822 116 52303	8,2kΩ	5%	0,5W	
3770	4822 116 83884	47kΩ	5%	0,16W	
3771	4822 116 83864	10kΩ	5%	0,5W	
3772	4822 116 52234	100kΩ	5%	0,5W	
3773	4822 116 52263	2,7kΩ	5%	0,5W	
3774	4822 116 52303	8,2kΩ	5%	0,5W	
3775	4822 116 83884	47kΩ	5%	0,16W	
3776	4822 116 52234	100kΩ	5%	0,5W	
3777	4822 116 83884	47kΩ	5%	0,16W	
3778	4822 116 52234	100kΩ	5%	0,5W	
3779	4822 116 83864	10kΩ	5%	0,5W	
3780	4822 116 52272	330kΩ	5%	0,5W	
3781	4822 116 52228	680Ω	5%	0,5W	
3782	4822 116 52228	680Ω	5%	0,5W	
3785	4822 116 83876	270Ω	5%	0.16W	
3786	4822 116 83884	47kΩ	5%	0,16W	HSD only
3787	4822 116 83872	220Ω	5%	0,5W	
3788	4822 116 52228	680Ω	5%	0,5W	
3789	4822 116 52228	680Ω	5%	0,5W	
3790	4822 116 52257	22kΩ	5%	0,5W	HSD only
3791	4822 116 83884	47kΩ	5%	0,16W	HSD only
3792	4822 116 52251	18kΩ	5%	0,5W	HSD only

COILS

5701	4822 157 10371	OSC. COIL VAR. 100kHz

DIODES

6703	4822 130 30621	1N4148
6706	4822 130 30621	1N4148
6707	4822 130 30621	1N4148
6708	4822 130 30621	1N4148
6709	4822 130 30621	1N4148

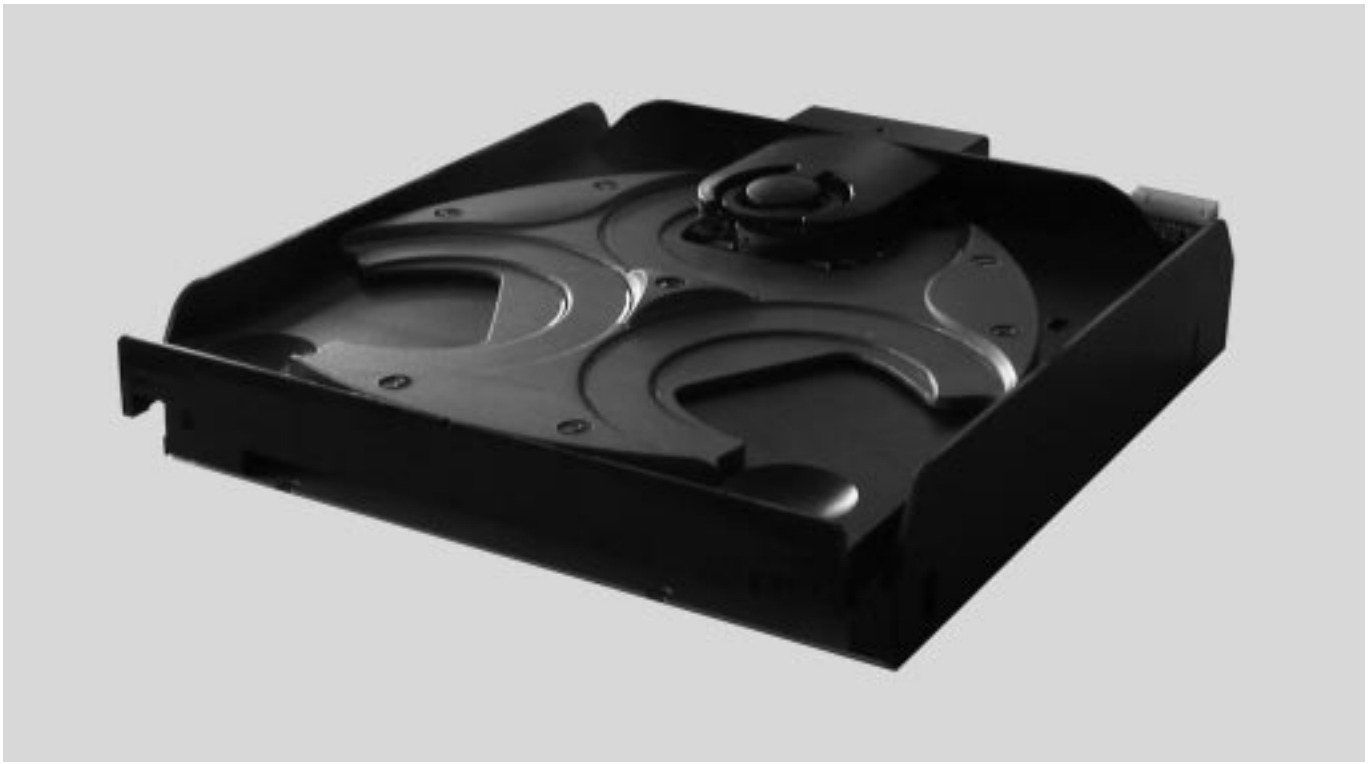
TRANSISTORS

7701	4822 130 44568	BC557B	HSD only
7702	4822 130 40959	BC547B	HSD only
7704	4822 130 40981	BC337-25	
7709	4822 130 40959	BC547B	HSD only
7710	4822 130 40959	BC547B	HSD only
7713	4822 130 40981	BC337-25	
7714	4822 130 40981	BC337-25	
7715	4822 130 40981	BC337-25	
7716	4822 130 40981	BC337-25	
7717	4822 130 40959	BC547B	
7718	4822 130 40959	BC547B	
7719	4822 130 40959	BC547B	
7722	4822 130 40959	BC547B	HSD only

INTEGRATED CIRCUITS

7711	4822 209 17498	AN7323, REC/PB-AMPLIFIER IC
7712	4822 209 17498	AN7323, REC/PB-AMPLIFIER IC

Note: Only the parts mentioned in this list are normal service parts.



3CDC 99 Module

(3 Disc Carrousel Changer)

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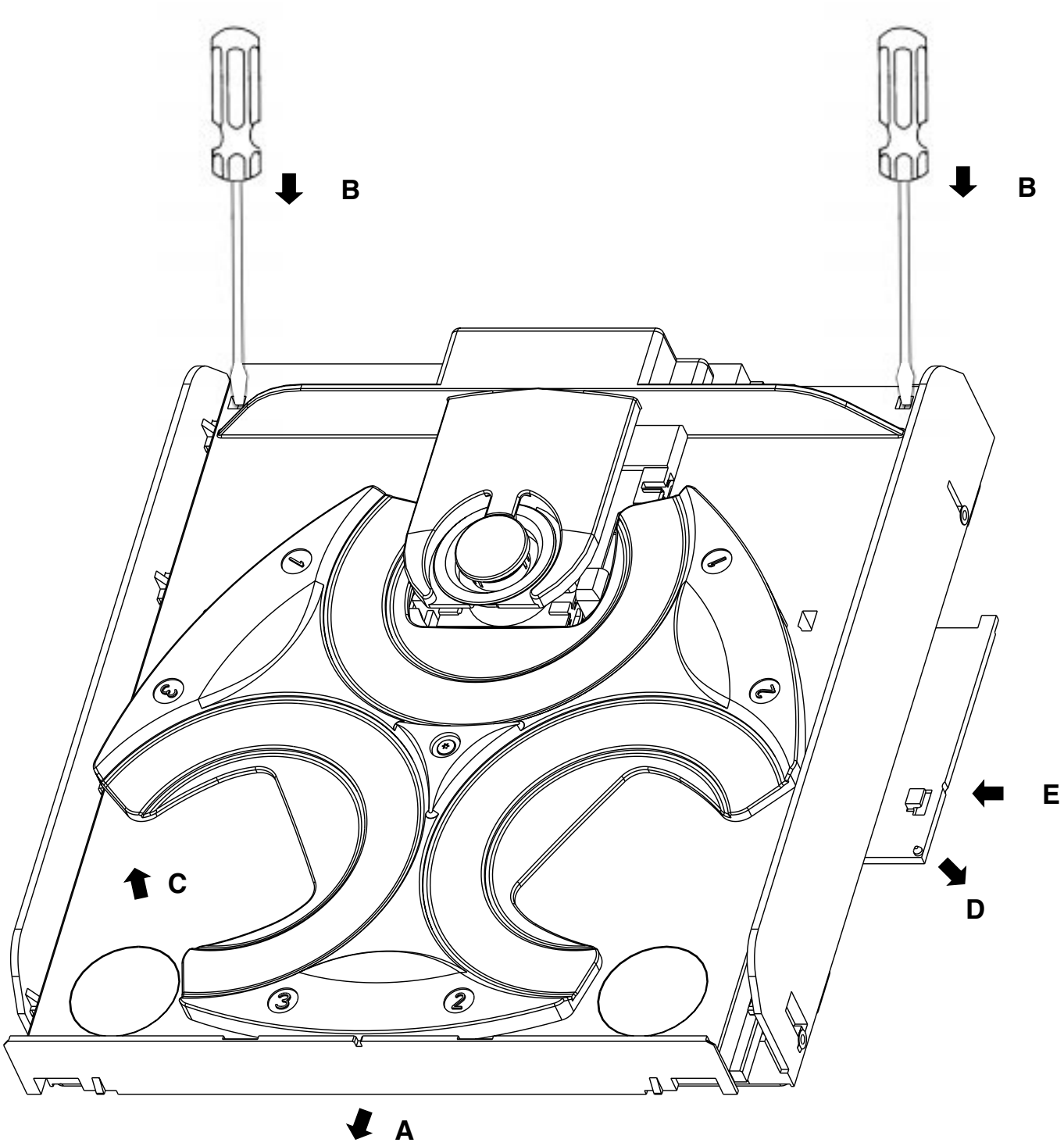
Demounting Hints



Demounting of Drawer

→ **A** Pull drawer outwards
→ **B** Unlock drawer with screwdriver
→ **C** Lift drawer to demount from chassis

Demounting of Flex Plate

→ **D** Lift plate to unlock pin from bottom plate
→ **E** Move plate inwards to demount from bottom plate

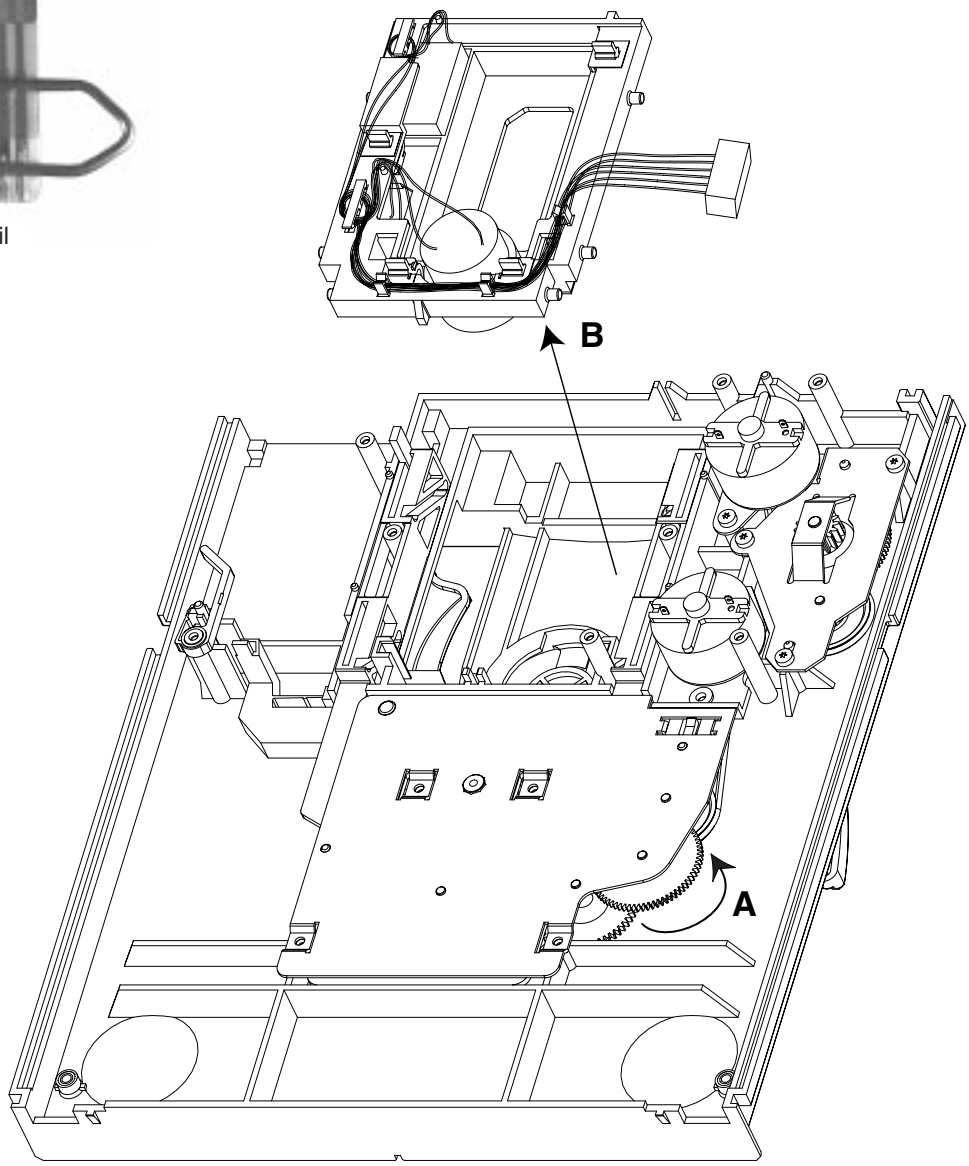
Servicing Hints

Replacement of CD Drive

See also exploded view of changer mechanism.

1. Demount printed circuit board: remove 5 screws.
2. Disconnect flexfoil and JST connector of CD drive from Printed circuit board. Shortcircuit the flexfoil with a paperclip to protect the laser against ESD.
3. Remove 2 screws (pos 107,108) and demount CD drive lockings (pos 105,106).
4. Turn gearwheel (pos 42) of disc change mechanism by finger to move CD drive support in upper position as shown in picture below Ⓐ.
5. Demount CD drive support (pos 95) Ⓑ.
6. Replace CD drive (pos 100). The wire tree of JST connector has to be desoldered and resoldered on the new CD drive again.

CD drive flex foil

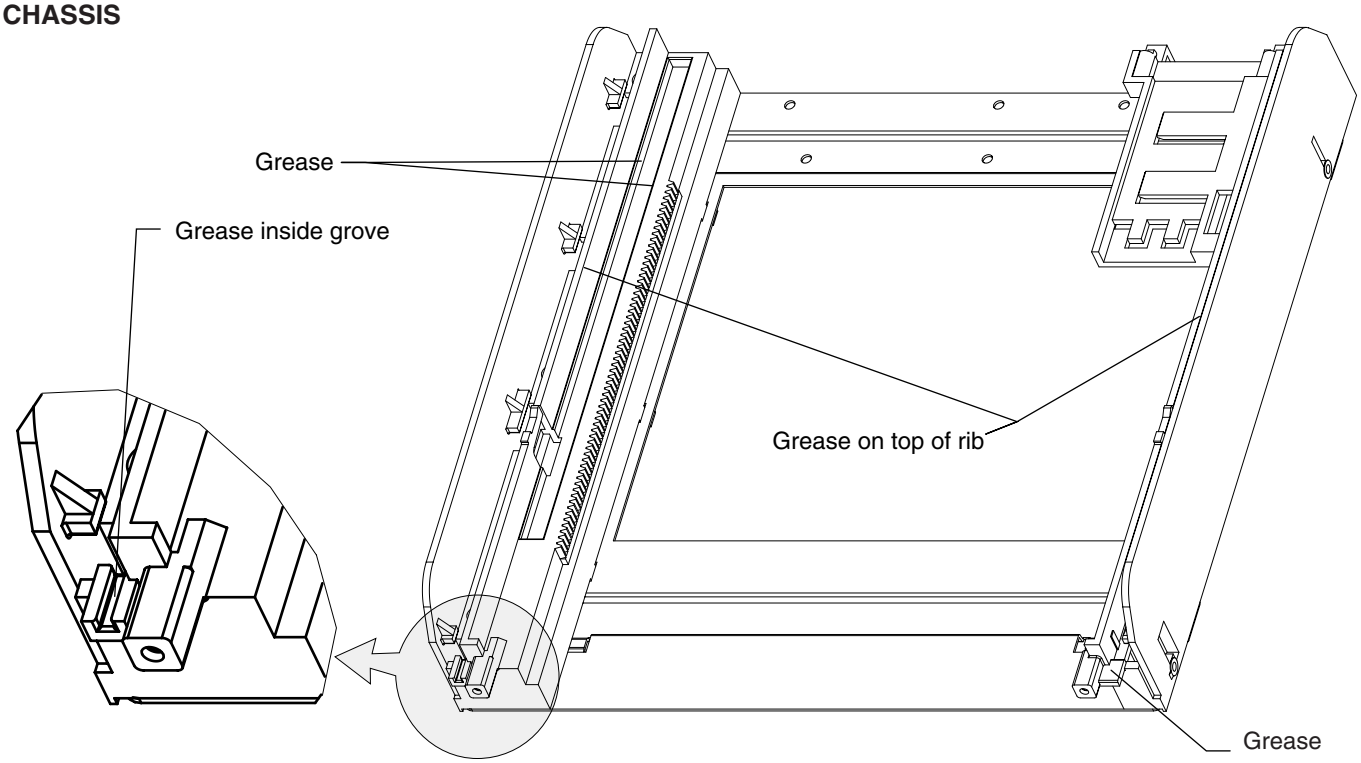


Mounting of Carrousel

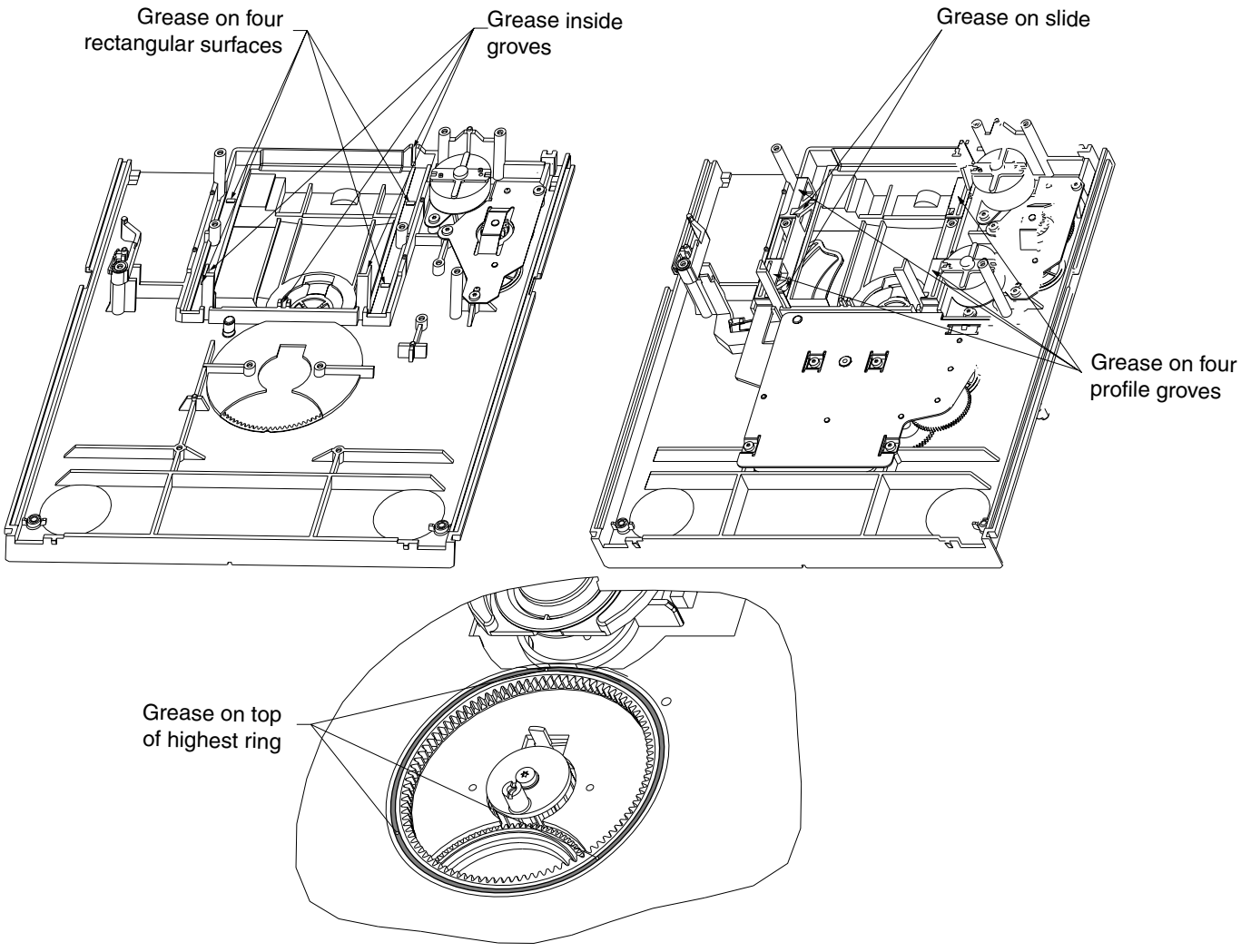
1. Turn gearwheel (pos 42) of disc change mechanism by finger until CD drive is in play position.
2. Mount carrousel (pos 115) so that disc is positioned right on turntable. Carrousel position number doesn´t matter.

Lubrication Instructions

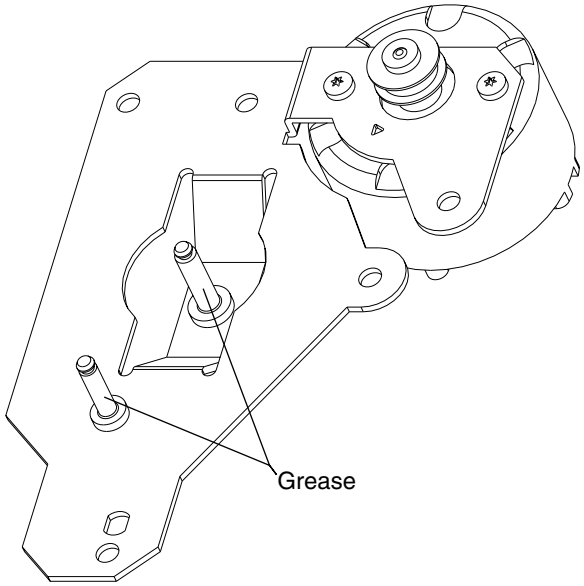
CHASSIS



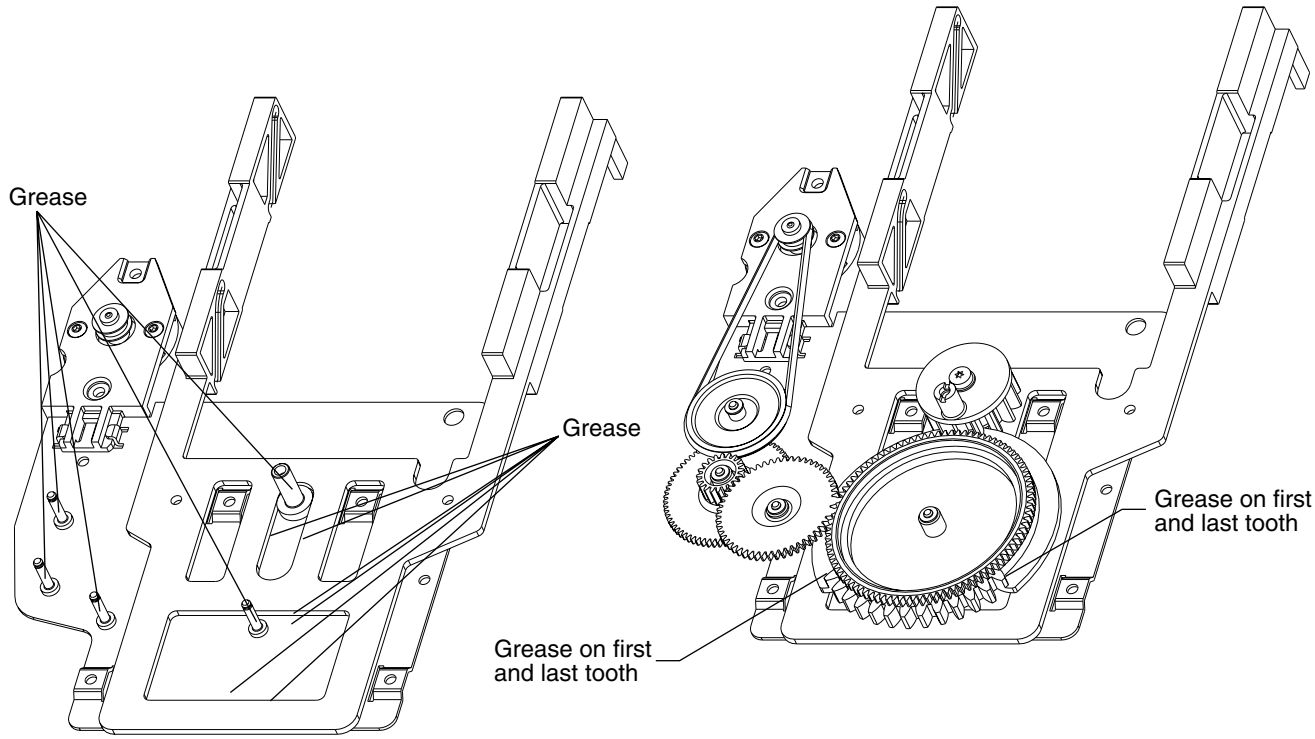
DRAWER


Grease on four rectangular surfaces
Grease inside groves
Grease on slide
Grease on four profile groves
Grease on top of highest ring

DRAWER MECHANISM



DISC CHANGE MECHANISM



Use only grease **Polylub GLY 801** service codenumber 4822 390 10136

WARNING

CHARGED CAPACITORS ON THE SERVO BOARD MAY DAMAGE THE CD DRIVE ELECTRONICS WHEN CONNECTING A NEW CDM MECHANISM. THAT´S WHY, BESIDES THE SAFETY MEASURES LIKE
• SWITCH OFF POWER SUPPLY
• ESD PROTECTION
ADDITIONAL ACTIONS MUST BE TAKEN BY THE REPAIR TECHNICIAN.

The following steps have to be done when replacing the CDM mechanism:

1. Disconnect old CD drive flexfoil from printed board
2. Connect paperclip to CD drive flexfoil to short-circuit flexfoil (fig.1)
3. Short-circuit printed board with **brass-sheet (4822 321 11197)** plugged into the flexfoil connector (fig.2)
4. Remove old CD drive mechanism
5. Position new CD mechanism in its studs
6. Remove short-circuit from printed board connector
7. Remove short-circuit from flexfoil of new CD drive
8. Connect new flexfoil to print connector (fig.3)

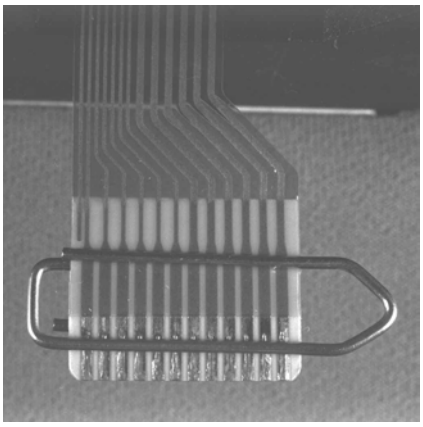


fig.1

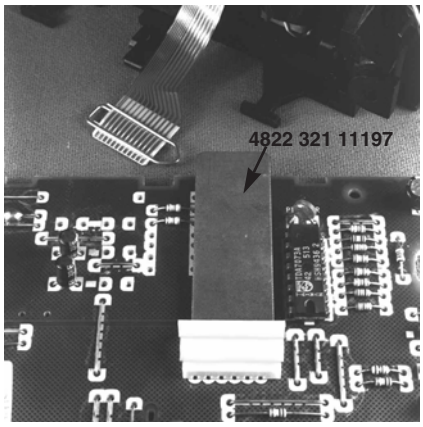


fig.2

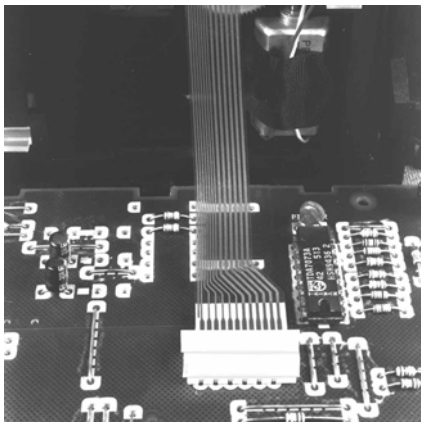
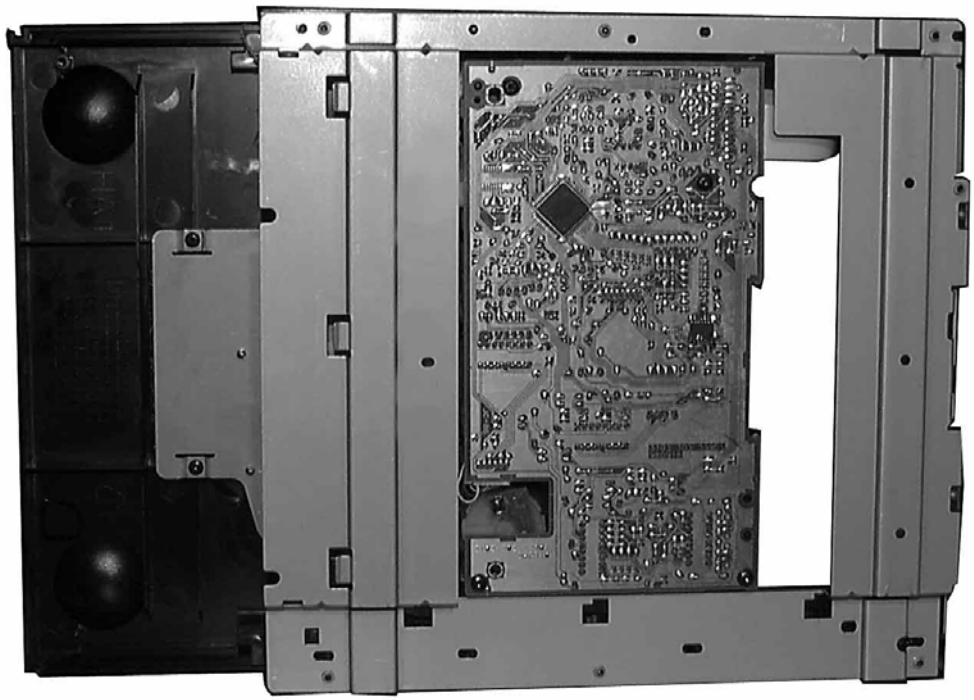
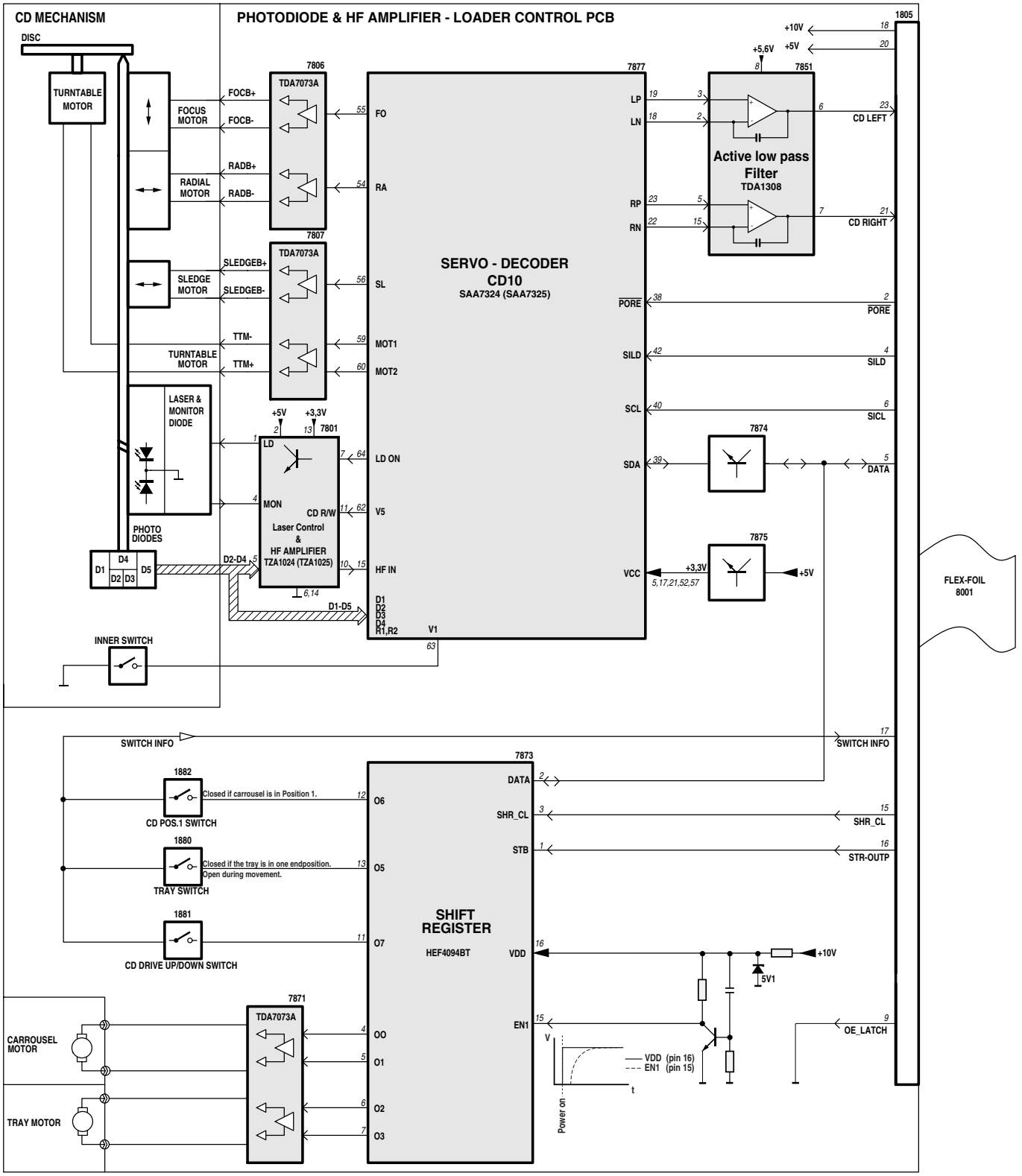


fig.3

Service Position

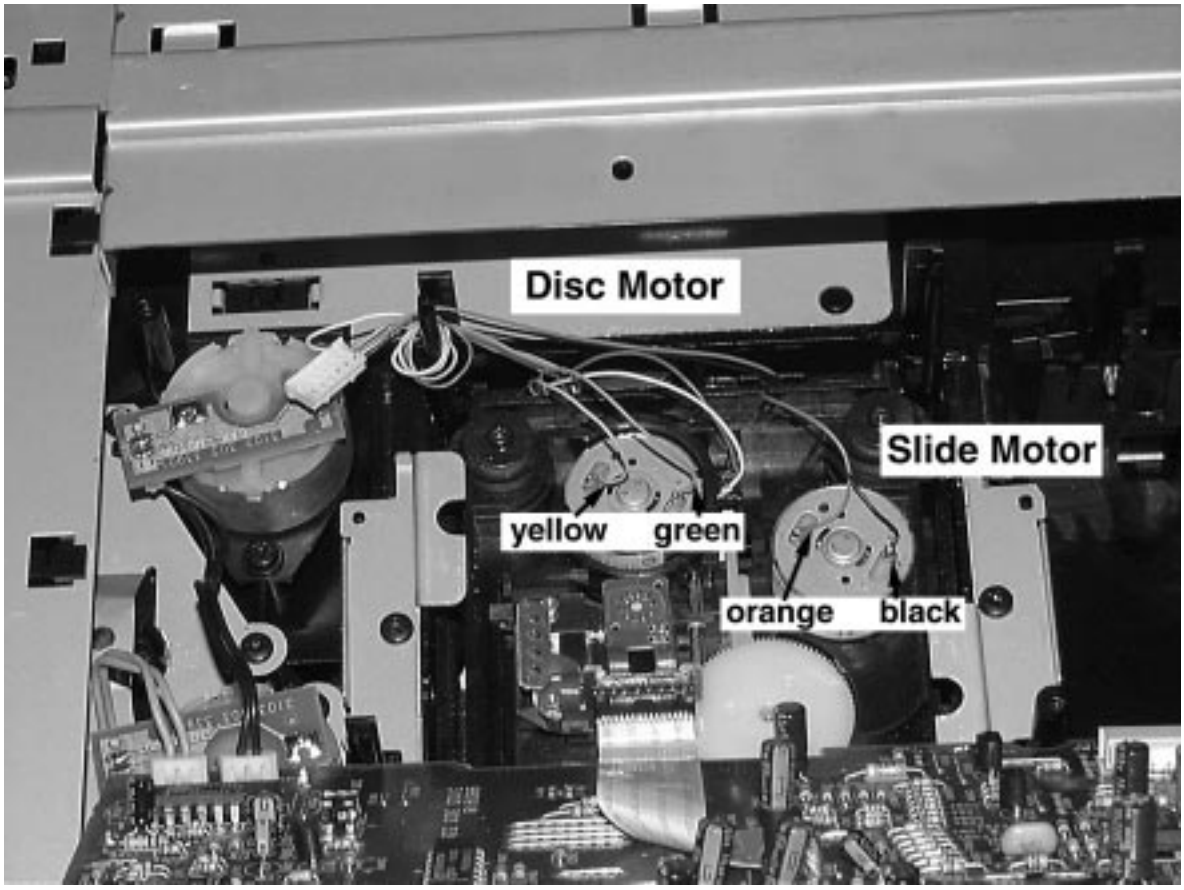


Blockdiagram

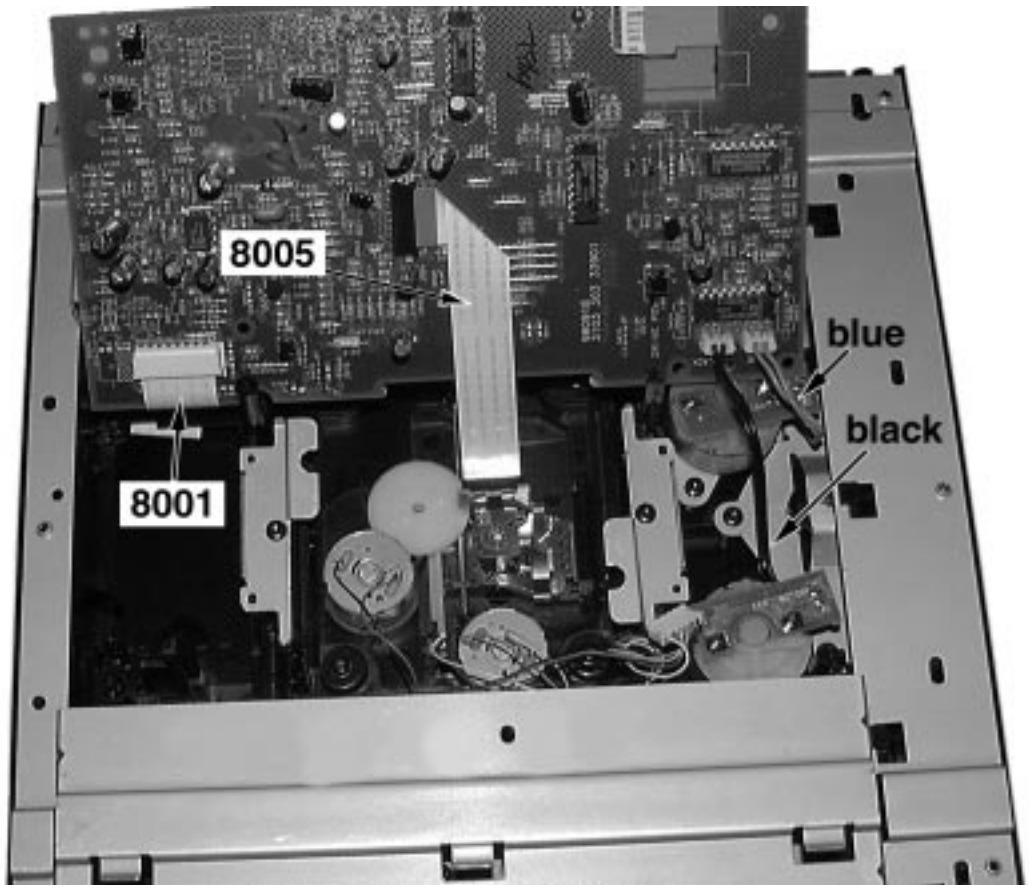


Blockdiagram 3CDC99 19981202

Wiring of CD Drive



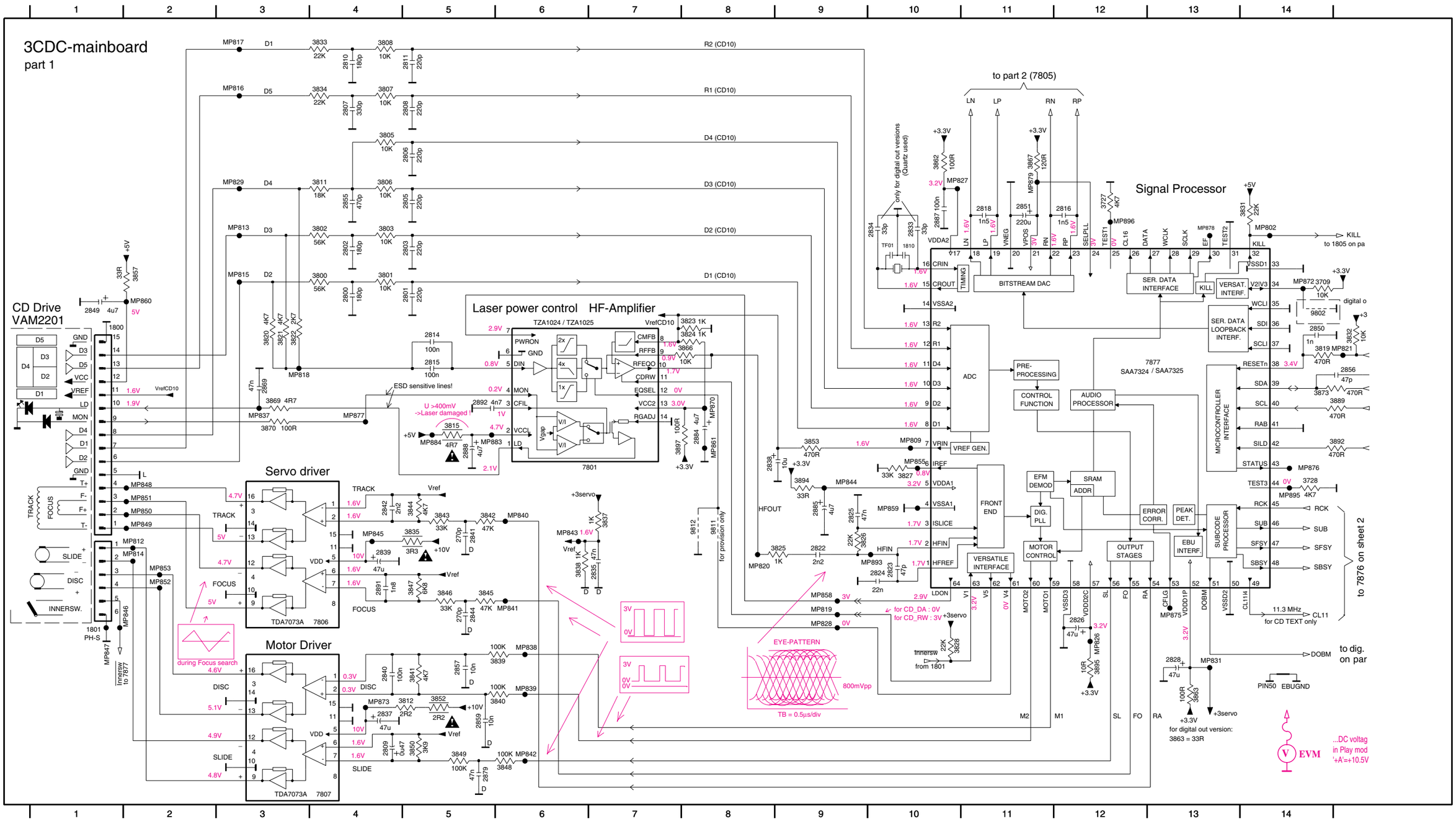
Pict. 1



Pict. 2

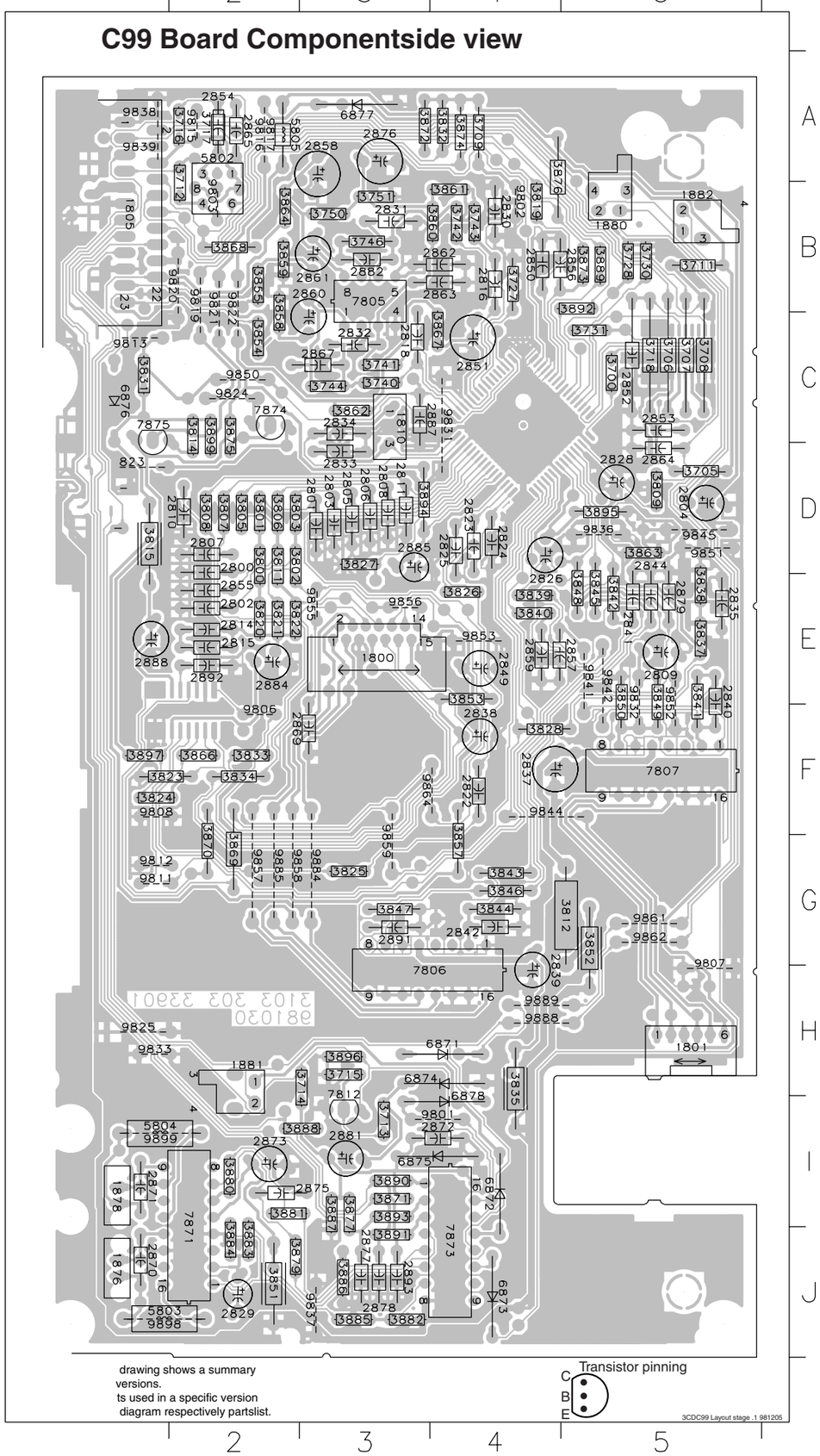
10-9

800 D2	2805 B5	2814 D5	2825 F9	2838 E8	2850 D14	2879 H5	2892 D5	3803 C4	3815 E5	3825 F9	3834 A4	3842 F5	3849 H5	3866 D8	3894 E9
801 G1	2806 B5	2815 D5	2826 G12	2839 F4	2851 B11	2880 D8	3709 C14	3805 B4	3819 D14	3826 F9	3835 F5	3843 F5	3850 H5	3867 B11	3895 G12
810 C10	2807 A4	2816 B12	2828 G13	2840 G4	2855 B4	2884 E8	3727 B12	3806 B4	3820 D3	3827 E10	3837 F7	3844 F5	3852 H5	3869 D3	3897 E7
800 C4	2808 A5	2818 B11	2833 C10	2841 F5	2856 D15	2885 F9	3728 E14	3807 A4	3821 D3	3828 G10	3838 F6	3845 F5	3853 E9	3870 E3	7801 E7
801 C5	2809 H4	2822 F9	2834 C10	2842 F4	2857 G5	2887 B10	3800 C4	3808 A4	3822 D3	3831 B14	3839 G6	3846 F5	3857 C2	3873 D14	7806 G4
802 C4	2810 A4	2823 F10	2835 F7	2844 G5	2859 H5	2888 E5	3801 C4	3811 B4	3823 D8	3832 D15	3840 H6	3847 F5	3862 B10	3889 D15	7807 H4
803 C5	2811 A5	2824 F10	2837 H4	2849 C1	2869 D3	2891 F4	3802 C4	3812 H5	3824 D8	3833 A4	3841 G5	3848 H6	3863 H13	3892 E15	7877 D12



10-10

C99 Board Componentside view



drawing shows a summary
versions.
ts used in a specific version
diagram respectively partslist.

Transistor pinning

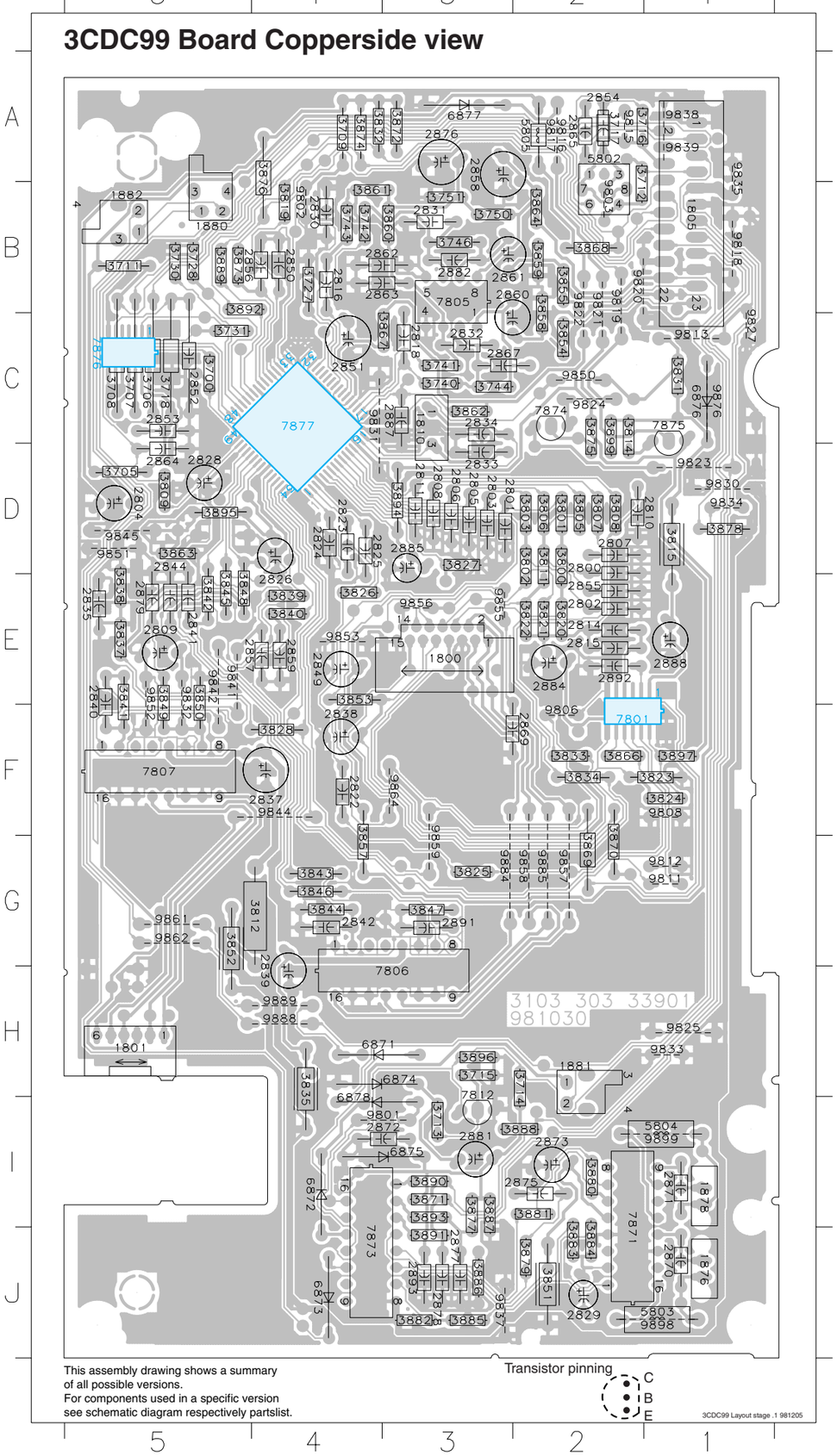
3CDC99 Layout stage .1 981205

Mapping

1800	E3	3716	A2	3889	B5	9849	E5
1801	H5	3717	A2	3890	I3	9850	B2
1805	B1	3718	C5	3891	J3	9851	D5
1810	C3	3727	B4	3892	B5	9852	E5
1876	J1	3728	B5	3893	I3	9853	E4
1878	I1	3730	B5	3894	D3	9855	E3
1880	B5	3731	C5	3895	D5	9856	E3
1881	H2	3740	C3	3896	H3	9857	G2
1882	B5	3741	C3	3897	F1	9858	G2
2800	D2	3742	B4	3899	C2	9859	G3
2801	D3	3743	B4	5802	A2	9861	G5
2802	E2	3744	C3	5803	J1	9862	G5
2803	D3	3746	B3	5804	I1	9864	F3
2804	D5	3750	B3	5805	A2	9876	C1
2805	D3	3751	B3	6871	H4	9884	G3
2806	D3	3800	D2	6872	I4	9885	G2
2807	D2	3801	D2	6873	J4	9888	H4
2808	D3	3802	D2	6874	H3	9889	H4
2809	E5	3803	D2	6875	I3	9898	J1
2810	D2	3805	D2	6876	C1	9899	I1
2811	D3	3806	D2	6877	A3		
2814	E2	3807	D2	6878	H4		
2815	E2	3808	D2	7801	F1		
2816	B4	3809	D5	7805	B3		
2818	C3	3811	D2	7806	H3		
2822	F4	3812	G5	7807	F5		
2823	D4	3814	C2	7812	H3		
2824	D4	3815	D1	7871	J2		
2825	D4	3819	B4	7873	J4		
2826	E4	3820	E2	7874	C2		
2828	D5	3821	E2	7875	C1		
2829	J2	3822	E2	7876	C5		
2830	B4	3823	F1	7877	C4		
2831	B3	3824	F1	9801	I4		
2832	C3	3825	G3	9802	B4		
2833	D3	3826	E4	9803	B2		
2834	C3	3827	D3	9805	D1		
2835	E5	3828	F4	9806	F2		
2837	F4	3831	C1	9807	G5		
2838	F4	3832	A4	9808	F1		
2839	H4	3833	F2	9811	G1		
2840	E5	3834	F2	9812	G1		
2841	E5	3835	H4	9813	C1		
2842	G4	3837	E5	9815	A2		
2844	D5	3838	E5	9816	A2		
2849	E4	3839	E4	9817	A2		
2850	B4	3840	E4	9818	B1		
2851	C4	3841	E5	9819	B2		
2852	C5	3842	E5	9820	B2		
2853	C5	3843	G4	9821	B2		
2854	A2	3844	G4	9822	B2		
2855	E2	3845	E5	9823	D1		
2856	B5	3846	G4	9824	C2		
2857	E5	3847	G3	9825	H1		
2858	A3	3848	E5	9827	C1		
2859	E4	3849	E5	9830	D1		
2860	B3	3850	E5	9831	C4		
2861	B3	3851	J2	9832	E5		
2862	B4	3852	G5	9833	H1		
2863	B4	3853	E4	9834	D1		
2864	D5	3854	C2	9835	A1		
2865	A2	3855	B2	9836	D5		
2867	C3	3857	G4	9837	J3		
2869	F2	3858	C2	9838	A1		
2870	J1	3859	B2	9839	A1		
2871	I1	3860	B4	9841	E5		
2872	I4	3861	B4	9842	E5		
2873	I2	3862	C3	9844	F4		
2875	I3	3863	D5	9845	D5		
2876	A3	3864	B2	9850	C2		
2877	J3	3866	F2	9851	D5		
2878	J3	3867	C4	9852	E5		
2879	E5	3868	B2	9853	E4		
2881	I3	3869	G2	9855	E3		
2882	B3	3870	G2	9856	E3		
2884	E2	3871	I3	9857	G2		
2885	D3	3872	A3	9858	G2		
2887	C4	3873	B5	9859	G3		
2888	E1	3874	A4	9861	G5		
2891	G3	3875	C2	9862	G5		
2892	E2	3876	A4	9864	F3		
2893	J3	3877	I3	9876	C1		
3700	C5	3878	D1	9884	G3		
3705	D5	3879	J2	9885	G2		
3706	C5	3880	I2	9888	H4		
3707	C5	3881	I2	9889	H4		
3708	C5	3882	J3	9898	J1		
3709	A4	3883	J2	9899	I1		
3711	B5	3884	J2				
3712	B2	3885	J3				
3713	I3	3886	J3				
3714	H3	3887	I3				
3715	H3	3888	I3				

10-10

3CDC99 Board Copperside view



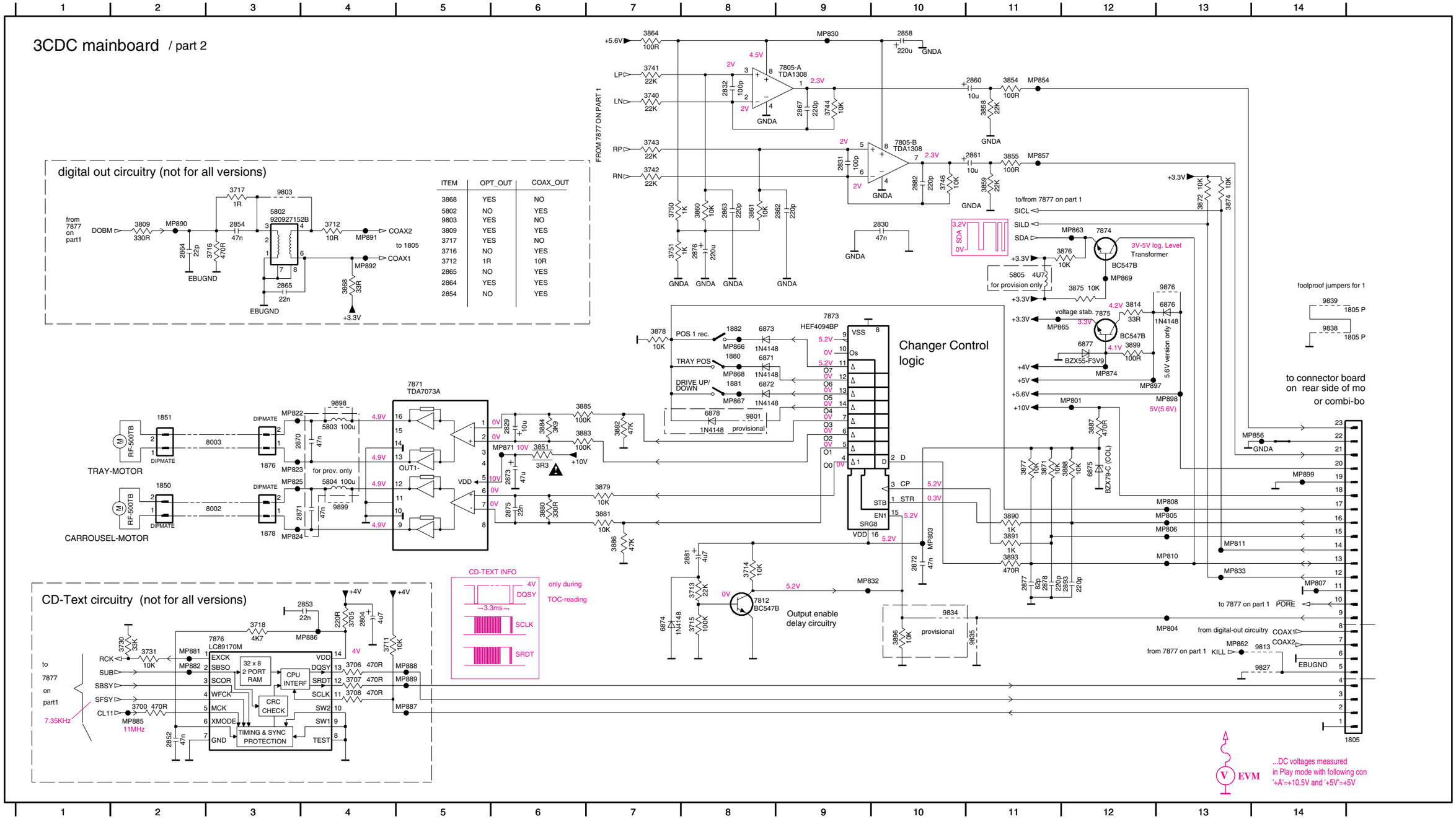
This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

Transistor pinning

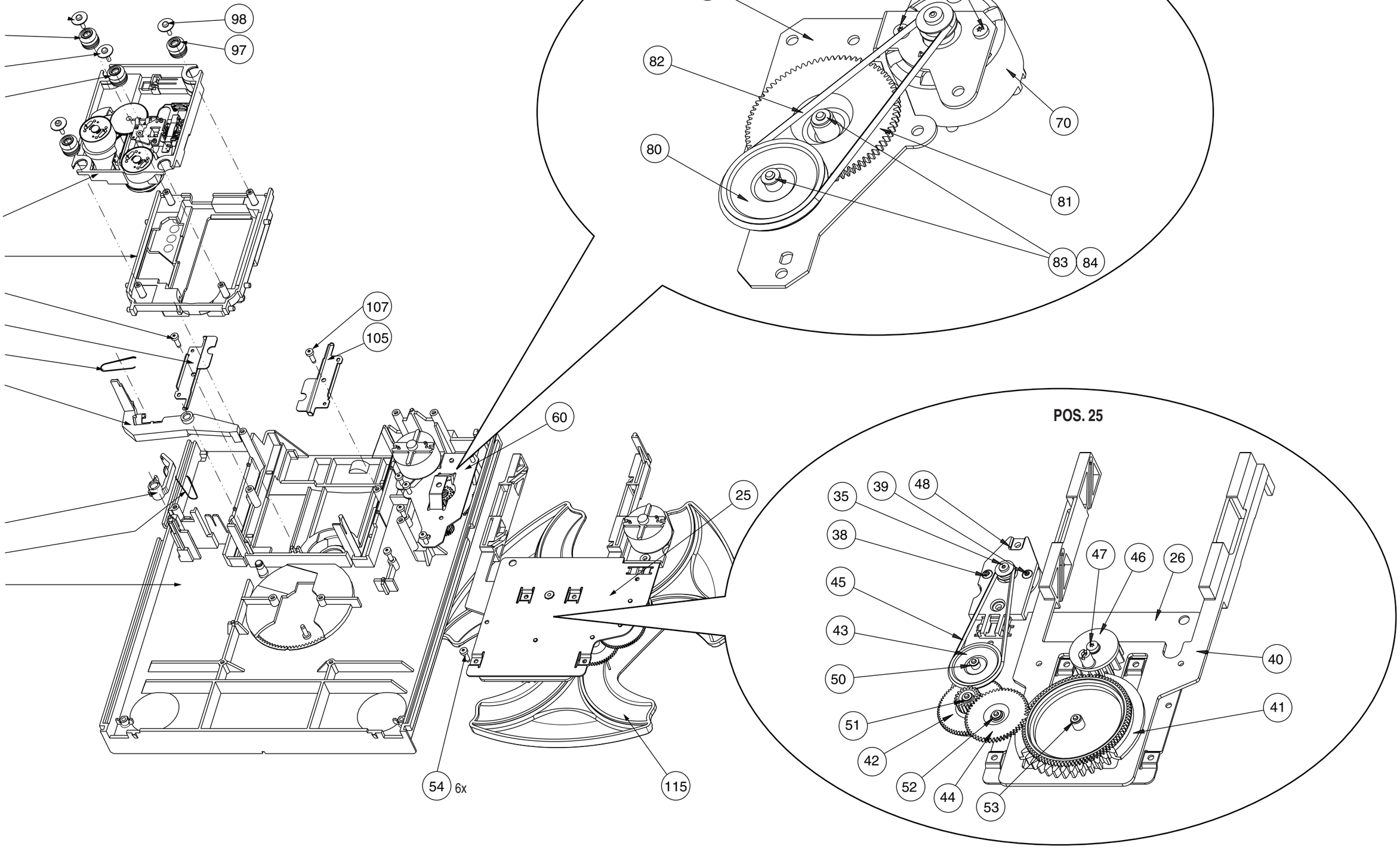
3CDC99 Layout stage .1 981205

10-11

805 H14 2804 G4 2853 G4 2863 B8 2872 F10 2881 F8 3707 G4 3715 G8 3740 A7 3750 B7 3855 B11 3868 C4 3877 E11 3883 E6 3890 F11 5803 E4 6874 G7 7805-B B10 7876 G3
876 E3 2829 E6 2854 C3 2864 C2 2873 E6 2882 B10 3708 H4 3716 C3 3741 A7 3751 C7 3858 A11 3871 E11 3878 D7 3884 E6 3891 F11 5804 E4 6875 E12 7812 G8 9801 E8
878 F3 2830 C10 2858 A10 2865 C3 2875 F6 2893 F12 3711 G4 3717 B3 3742 B7 3809 C2 3859 B11 3872 B13 3879 E7 3885 D6 3893 F11 5805 C11 6876 C13 7871 D5 9803 B3
880 D8 2831 B9 2860 A11 2867 A9 2876 C8 3700 H2 3712 C4 3718 G3 3743 B7 3814 C12 3860 B8 3874 B13 3880 F6 3886 F7 3896 G10 6871 D8 6877 D12 7873 D9 9813 G14
881 D8 2832 A8 2861 B11 2870 E3 2877 F11 3705 G4 3713 F8 3730 G2 3744 A9 3851 E6 3861 B8 3875 C12 3881 F7 3887 E12 3899 D12 6872 D8 6878 E8 7874 C12 9827 G14
882 D8 2852 H2 2862 B8 2871 F4 2878 F11 3706 G4 3714 F8 3731 G2 3746 B10 3854 A11 3864 A7 3876 C12 3882 E7 3888 E12 5802 B3 6873 D8 7805-A A9 7875 D12 9834 G10



10-12


POS. 60
73
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97
107
105
60
25
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6x
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POS. 25
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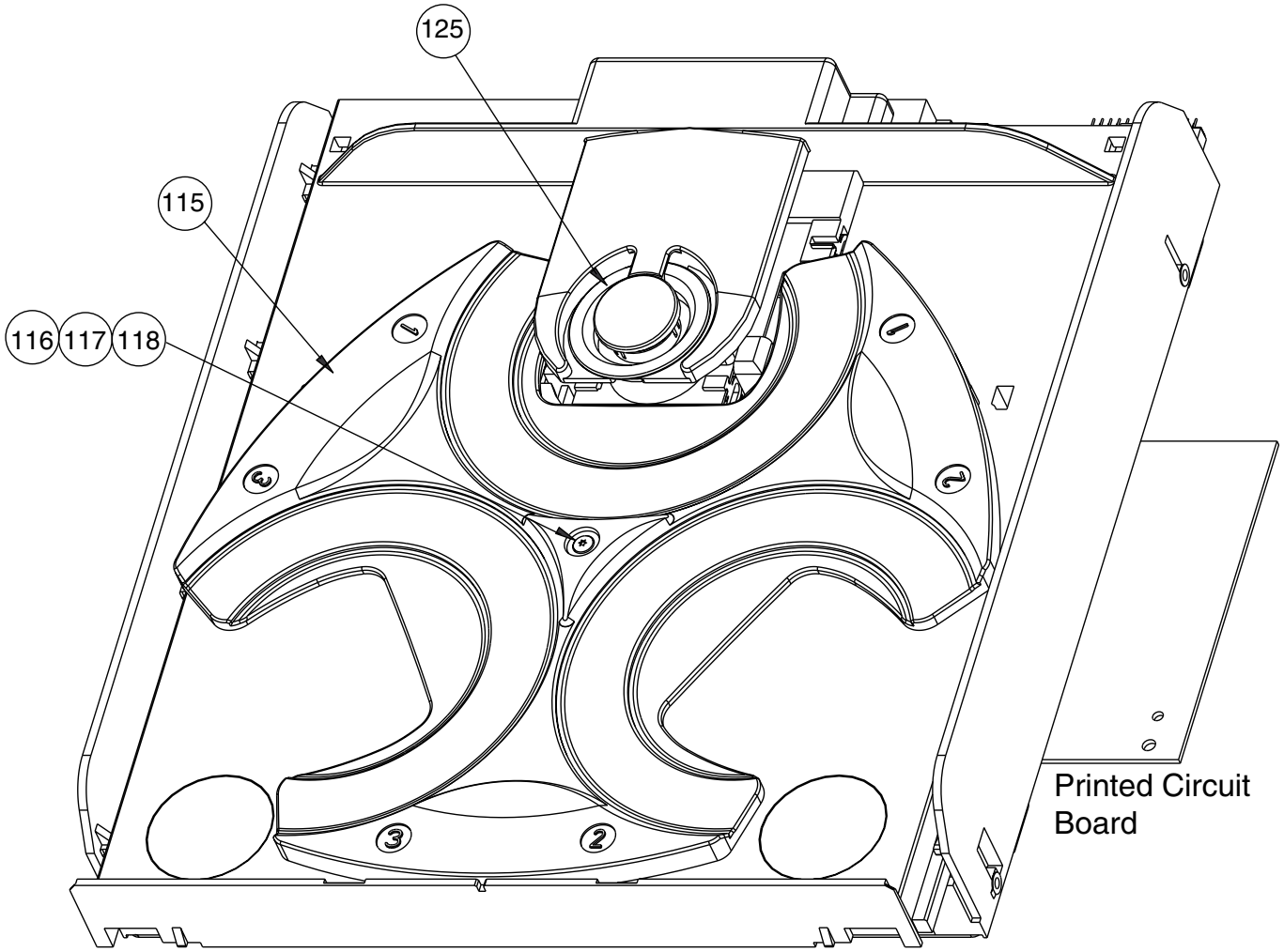
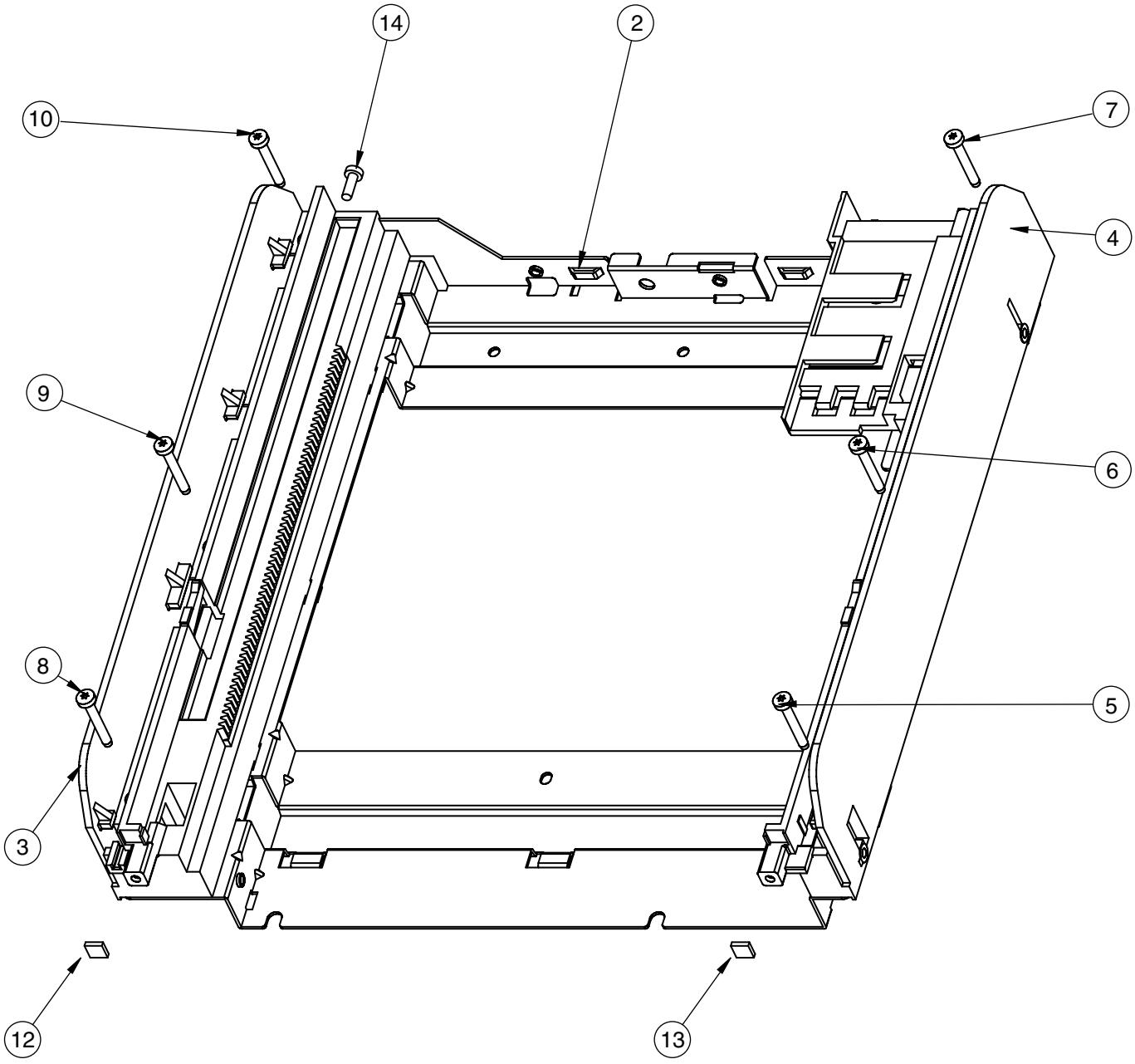


MECHANICAL PARTSLIST 3CDC-99 MODULE

	4822 390 10136	POLYLUB GLY801 (GREASE)
3	4822 463 11008	GUIDE LEFT
4	4822 463 11009	GUIDE RIGHT
21	4822 441 11615	DRAWER
22	4822 402 10088	BRACKET TUMBLER
38	4822 502 12548	SCREW M2,6X3,5
39	4822 502 12548	SCREW M2,6X3,5
40	4822 463 11011	SLIDE
41	4822 522 10509	CONTROL DISC
42	4822 522 10492	GEAR WHEEL
43	4822 528 10937	PULLEY
44	4822 522 10493	IDLER WHEEL
45	4822 358 10115	BELT
46	4822 466 10735	ECCENTRIC GEAR WHEEL
50	4822 532 12364	WASHER
51	4822 532 12364	WASHER
52	4822 532 12364	WASHER
53	4822 532 12364	WASHER
35	4822 361 10753	CARROUSEL MOTOR
70	4822 361 10753	CARROUSEL MOTOR

continued on next page



MECHANICAL PARTSLIST 3CDC-99 MODULE

73	4822 502 12548	SCREW M2,6X3,5
74	4822 502 12548	SCREW M2,6X3,5
80	4822 528 10937	PULLEY
81	4822 522 10494	GEAR DRAWER
82	4822 358 10115	BELT
83	4822 532 12364	WASHER
84	4822 532 12364	WASHER
95	4822 404 10895	SUPPORT
96	4822 529 10431	SUSPENSION
97	4822 529 10431	SUSPENSION
100	4822 691 10772	CD DRIVE VAM2201
115	4822 466 10736	CARROUSEL
117	4822 532 12365	BUSH DRAWER
123	4822 402 11237	SWITCH BRACKET
125	4822 401 11708	DISC CLAMP

ELECTRICAL PARTSLIST 3CDC-99 MODULE

MISCELLANEOUS

1800	4822 265 10925	FLEX FOIL CONNECTOR 15PIN
1805	4822 265 11533	FLEX FOIL CONNECTOR 23PIN
1805	2422 025 09768	FLEX FOIL CONNECTOR 19PIN
1805	4822 267 51322	FLEX FOIL CONNECTOR 15PIN
1880	4822 276 13503	SWITCH
1881	4822 276 13503	SWITCH
1882	4822 276 13503	SWITCH
8001	4822 320 12659	FLEX FOIL 23PIN 480MM *
8001	4822 320 12729	FLEX FOIL 23PIN 400MM
8001	4822 320 12658	FLEX FOIL 19PIN 480MM
8001	4822 320 12232	FLEX FOIL 15PIN 480MM
8005	3103 308 91820	FLEX FOIL 15PIN 95MM

* will be replaced by shorter length (400mm) when stock is out.

CAPACITORS

2800	4822 126 10053	180pF	10%	50V
2801	4822 122 10466	220pF	10%	50V
2802	4822 126 10053	180pF	10%	50V
2803	4822 122 10466	220pF	10%	50V
2804	4822 124 40246	4,7µF	20%	63V
2805	4822 122 10466	220pF	10%	50V
2806	4822 122 10466	220pF	10%	50V
2807	4822 126 12787	330pF	10%	50V
2808	4822 122 10466	220pF	10%	50V
2809	5322 124 41948	0,47µF	20%	50V
2810	4822 126 10053	180pF	10%	50V
2811	4822 122 10466	220pF	10%	50V
2814	4822 126 12785	47nF	20%	50V
2815	4822 126 12882	100nF	20%	50V
2816	4822 126 12878	1,5nF	10%	16V
2818	4822 126 12878	1,5nF	10%	16V
2822	4822 126 12339	2,2nF	10%	16V
2823	4822 122 33848	47pF	5%	50V
2824	4822 126 11585	22nF	20%	50V
2825	4822 126 12785	47nF	20%	50V
2826	4822 124 80231	47µF	20%	16V
2828	4822 124 40433	47µF	20%	25V
2829	4822 124 21732	10µF	20%	25V
2830	4822 126 12785	47nF	20%	50V
2831	4822 122 33195	100pF	10%	50V
2832	4822 122 33195	100pF	10%	50V
2833	4822 122 33069	33pF	5%	50V
2834	4822 122 33069	33pF	5%	50V
2835	4822 126 12785	47nF	20%	50V
2837	4822 124 40433	47µF	20%	25V
2838	4822 124 41579	10µF	20%	50V
2839	4822 124 40433	47µF	20%	25V
2840	4822 126 12882	100nF	20%	50V
2841	4822 126 12702	270pF	10%	50V
2842	4822 126 12339	2,2nF	10%	16V
2844	4822 126 12702	270pF	10%	50V
2849	4822 124 40246	4,7µF	20%	63V
2850	4822 122 33197	1nF	10%	50V
2851	4822 124 40196	220µF	20%	16V
2852	4822 126 12785	47nF	20%	50V
2853	4822 126 11585	22nF	20%	50V
2854	4822 126 12785	47nF	20%	50V
2855	4822 122 33519	470pF	10%	50V
2856	4822 122 33848	47pF	5%	50V
2857	4822 121 51387	10nF	20%	16V
2858	4822 124 40196	220µF	20%	16V
2859	4822 121 51387	10nF	20%	16V
2860	4822 124 41579	10µF	20%	50V
2861	4822 124 41579	10µF	20%	50V

CAPACITORS

2862	4822 122 10466	220pF	10%	50V
2863	4822 122 10466	220pF	10%	50V
2864	4822 122 33191	22pF	5%	50V
2865	4822 126 11585	22nF	20%	50V
2867	4822 122 10466	220pF	10%	50V
2869	4822 126 12785	47nF	20%	50V
2872	4822 126 12785	47nF	20%	50V
2873	4822 124 12233	47µF	20%	25V
2875	4822 126 11585	22nF	20%	50V
2876	4822 124 40196	220µF	20%	16V
2877	4822 122 10319	82pF	5%	50V
2878	4822 122 10466	220pF	10%	50V
2879	4822 126 12785	47nF	20%	50V
2882	4822 122 10466	220pF	10%	50V
2884	4822 124 40246	4,7µF	20%	63V
2885	4822 124 40246	4,7µF	20%	63V
2887	4822 126 12882	100nF	20%	50V
2888	4822 124 40246	4,7µF	20%	63V
2891	4822 122 10576	1,8nF	10%	16V
2892	4822 126 11714	4,7nF	20%	16V
2893	4822 122 10466	220pF	10%	50V

RESISTORS

3700	4822 116 83883	470Ω	5%	0,16W
3705	4822 116 83872	220Ω	5%	0,5W
3706	4822 116 83883	470Ω	5%	0,16W
3707	4822 116 83883	470Ω	5%	0,16W
3708	4822 116 83883	470Ω	5%	0,16W
3709	4822 116 83864	10kΩ	5%	0,5W
3711	4822 116 83864	10kΩ	5%	0,5W
3712	4822 116 52176	10Ω	5%	0,5W
3713	4822 116 52257	22kΩ	5%	0,5W
3714	4822 116 83864	10kΩ	5%	0,5W
3715	4822 116 52234	100kΩ	5%	0,5W
3716	4822 116 83883	470Ω	5%	0,16W
3718	4822 116 52283	4,7kΩ	5%	0,5W
3727	4822 116 52283	4,7kΩ	5%	0,5W
3728	4822 116 52283	4,7kΩ	5%	0,5W
3730	4822 116 52271	33kΩ	5%	0,16W
3731	4822 116 83864	10kΩ	5%	0,5W
3740	4822 116 52257	22kΩ	5%	0,5W
3741	4822 116 52257	22kΩ	5%	0,5W
3742	4822 116 52257	22kΩ	5%	0,5W
3743	4822 116 52257	22kΩ	5%	0,5W
3744	4822 116 83864	10kΩ	5%	0,5W
3746	4822 116 83864	10kΩ	5%	0,5W
3750	4822 050 11002	1kΩ	5%	0,2W
3751	4822 050 11002	1kΩ	5%	0,2W
3800	4822 116 52291	56kΩ	5%	0,5W
3801	4822 116 83864	10kΩ	5%	0,5W
3802	4822 116 52291	56kΩ	5%	0,5W
3803	4822 116 83864	10kΩ	5%	0,5W
3805	4822 116 83864	10kΩ	5%	0,5W
3806	4822 116 83864	10kΩ	5%	0,5W
3807	4822 116 83864	10kΩ	5%	0,5W
3808	4822 116 83864	10kΩ	5%	0,5W
3809	4822 116 83876	270Ω	5%	0.16W
3811	4822 116 52251	18kΩ	5%	0,5W
3812	4822 053 10228	2,2Ω	5%	1W
3814	4822 116 52191	33Ω	5%	0,5W
3815	4822 052 10478	4,7Ω	5%	NFR
3819	4822 116 83883	470Ω	5%	0,16W
3820	4822 116 52283	4,7kΩ	5%	0,5W
3821	4822 116 52283	4,7kΩ	5%	0,5W

ELECTRICAL PARTSLIST 3CDC-99 MODULE

RESISTORS

3822	4822 116 52249	1,8kΩ	5%	0,16W
3823	4822 050 11002	1kΩ	5%	0,2W
3824	4822 050 11002	1kΩ	5%	0,2W
3825	4822 050 11002	1kΩ	5%	0,2W
3826	4822 116 52257	22kΩ	5%	0,5W
3827	4822 116 52271	33kΩ	5%	0,16W
3828	4822 116 52257	22kΩ	5%	0,5W
3831	4822 116 52257	22kΩ	5%	0,5W
3832	4822 116 83864	10kΩ	5%	0,5W
3833	4822 116 52257	22kΩ	5%	0,5W
3834	4822 116 52257	22kΩ	5%	0,5W
3835	4822 052 10338	3,3Ω		NFR25
3837	4822 050 11002	1kΩ	5%	0,2W
3838	4822 050 11002	1kΩ	5%	0,2W
3839	4822 116 52234	100kΩ	5%	0,5W
3840	4822 116 52234	100kΩ	5%	0,5W
3841	4822 116 52283	4,7kΩ	5%	0,5W
3842	4822 116 83884	47kΩ	5%	0,16W
3843	4822 116 52271	33kΩ	5%	0,16W
3844	4822 116 52283	4,7kΩ	5%	0,5W
3845	4822 116 83884	47kΩ	5%	0,16W
3846	4822 116 52271	33kΩ	5%	0,16W
3847	4822 116 83961	6,8kΩ	5%	0,16W
3848	4822 116 52234	100kΩ	5%	0,5W
3849	4822 116 52234	100kΩ	5%	0,5W
3850	4822 116 52276	3,9kΩ	5%	0,5W
3851	4822 052 10338	3,3Ω		NFR25
3852	4822 052 10228	2,2Ω	5%	0,33W
3853	4822 116 83883	470Ω	5%	0,16W
3854	4822 116 52175	100Ω	5%	0,5W
3855	4822 116 52175	100Ω	5%	0,5W
3857	4822 116 52191	33Ω	5%	0,5W
3858	4822 116 52257	22kΩ	5%	0,5W
3859	4822 116 52257	22kΩ	5%	0,5W
3860	4822 116 83864	10kΩ	5%	0,5W
3861	4822 116 83864	10kΩ	5%	0,5W
3862	4822 116 52175	100Ω	5%	0,5W
3863	4822 116 52175	100Ω	5%	0,5W
3863	4822 116 52191	33Ω	5%	0,5W
3864	4822 116 52175	100Ω	5%	0,5W
3866	4822 116 83864	10kΩ	5%	0,5W
3867	4822 116 83868	150Ω	5%	0,5W
3869	4822 050 24708	4,7Ω	1%	0,6W
3870	4822 116 52175	100Ω	5%	0,5W
3871	4822 116 83864	10kΩ	5%	0,5W
3872	4822 116 83864	10kΩ	5%	0,5W
3873	4822 116 83883	470Ω	5%	0,16W
3874	4822 116 83864	10kΩ	5%	0,5W
3875	4822 116 83864	10kΩ	5%	0,5W
3876	4822 116 83864	10kΩ	5%	0,5W
3877	4822 116 83864	10kΩ	5%	0,5W
3878	4822 116 83864	10kΩ	5%	0,5W
3879	4822 116 83864	10kΩ	5%	0,5W
3880	4822 116 52219	330Ω	5%	0,5W
3881	4822 116 83864	10kΩ	5%	0,5W
3882	4822 116 83884	47kΩ	5%	0,16W
3883	4822 116 52234	100kΩ	5%	0,5W
3884	4822 116 52276	3,9kΩ	5%	0,5W
3885	4822 116 52234	100kΩ	5%	0,5W
3886	4822 116 83884	47kΩ	5%	0,16W
3887	4822 116 83883	470Ω	5%	0,16W
3888	4822 116 83864	10kΩ	5%	0,5W
3889	4822 116 83883	470Ω	5%	0,16W
3890	4822 050 11002	1kΩ	5%	0,2W
3891	4822 050 11002	1kΩ	5%	0,2W

RESISTORS

3892	4822 116 83883	470Ω	5%	0,16W
3893	4822 116 83883	470Ω	5%	0,16W
3894	4822 116 52191	33Ω	5%	0,5W
3895	4822 116 52176	10Ω	5%	0,5W
3897	4822 116 52175	100Ω	5%	0,5W
3899	4822 116 52175	100Ω	5%	0,5W

COILS

1810	4822 242 10849	QUARTZ 8,46MHz
1810	4822 242 73557	CERAMIC RES. 8,46MHz
5802	4822 156 31058	FILTER DIGITAL OUT

DIODES

6871	4822 130 30621	1N4148
6872	4822 130 30621	1N4148
6873	4822 130 30621	1N4148
6874	4822 130 30621	1N4148
6875	4822 130 34233	BZX79-B5V1
6877	4822 130 31981	BZX79-C3V9

TRANSISTORS

7812	4822 130 40959	BC547B
7874	4822 130 40959	BC547B
7875	4822 130 40959	BC547B

INTEGRATED CIRCUITS

7801 ©	4822 209 17286	TZA1024T/N1 HF-AMPLIFIER
7805	4822 209 17284	TDA1308 OPAMP
7806	4822 209 32852	TDA7073A/N2 SERVO DRIVER
7807	4822 209 32852	TDA7073A/N2 MOTOR DRIVER
7871	4822 209 32852	TDA7073A/N2 MOTOR DRIVER
7873	5322 209 10421	HEF4094BP SHIFT REGISTER
7876 ©	4822 209 16143	LC89170M CD TEXT
7877 ©	4822 209 17285	SAA7324H/M1 SIGNAL PROCESSOR

COMBI BOARD

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Brief introduction of the Combi Board

A. TRANSFORMER PRIMARY PART
Transformer Primary Circuit provide connection for AC mains supply and primary wires of transformer.

B. POWER SUPPLY PART
Power Supply Circuit consists of rectifiers, capacitive filters and voltage regulators. Regulated voltage include +5V6, +LED, +12A, +12M, -26V, PWDN. The +C supply to the power amplifier is not regulated. F1-F2 is the ac supply voltage to the FTD Display filament.

C. SOURCE SELECT & AMPLIFIER PART

a) SHIFT REGISTER (AF CONTROL)
This shift register deliver commands from the μP to control the AF functions which include source selection (A0 & A1 control lines), DSC modes , DBB, IS and CD_STBY. Other control lines such as MUTE, AMPON, STBY and PWM are coming directly from the μP on the Front board.

b) SOURCE SELECTION
One of the 4 sources, namely AUX, TAPE, TUNER, CD, can be selected via A0 & A1 lines which control the IC 7501 (HEF4052BT). Karaoke mic. mixing is connected to th e selected source before the signal is amplified with a buffer amplifier (Tr 7503 & 7504). The source signal is then split into recording path (for recording on tape) and main signal path (to the PWM volume control).

c) PWM VOLUME CONTROL
The discrete volume control makes use of 4 Transistors 7505, 7506, 7507 & 7508 (ON4986 or selected BC557B) and PWM control signal from μP. For good performance transistors for the left and right channels should be paired for gain characteristics.

d) SOUND FEATURES
Sound Features include the DBB, IS and 4 DSC modes. The sound features are realised with a hex-inverter IC 7530 (HEF4069UBT) as analog buffer/amplifier and transistors as electronic switches controlled by the shift registers (AF control).

e) POWER AMPLIFIER
IC 7391 (AN7125) is used as power amplifier.

f) CD_STBY CONTROL
This Transistor 7401 (BC337-25) switches on the supply +CD supply (derived from +12A) to CD servo control, HF circuit and the laser light pen on the CD Module during the CD mode only.

g) MATRIX SURROUND OUTPUT
The matrix surround feature is provided on board. This feature is only optional on certain type version.

D. KARAOKE PART
This simple Karaoke consists of a 1-mic. mono amplifier using discrete components. It has a level control using a rotary potmeter. This feature is available for some version only.

E. HEADPHONE PART
The headphone output is derived from the power amplifier output after the attenuation resistors which are tailored to deliver 18mW output power into a 32 ohm headphone.

F. CDC KEY PART
The CDC key buttons and LEDs are provided on this board.

Combi Board application

A262	FW-C3/37, FW-C35/37
A263	FW-C30/37
A264	FW-C30/21/21M
A265	FW-C30/30
A266	FW-C38/21/21M
A267	FW-C39/30
A268	FW-C39/33
A269	FW-C28/33
A270	FW-C38/22/34
A271	FW-C28/22/34
A278	FW-C38/37
A279	FW-C39/21/21M
A343	FW-V39/21K/21M

Features/Configuration:	A262	A263	A264	A265	A266	A267	A268	A269	A270	A271	A278	A279	A343
Aux In	x	x	x	x	x	x	x	x	x	x	x	x	x
Sub-woofer Out	x	x	x	x	x	x	x	-	x	-	x	x	x
Digital Out	-	-	-	-	x	x	x	-	x	-	x	x	-
I.S.	-	-	-	-	x	x	x	-	x	-	x	x	x
Voltage Selector	-	-	x	-	x	-	-	-	-	-	-	x	x
Karaoke	-	-	x	-	x	-	x	x	-	-	-	-	x
DBB	x	x	x	x	x	x	x	x	x	x	x	x	x
DSC	x	x	x	x	x	x	x	x	x	x	x	x	x
Matrix Surroud	-	x	-	-	x	x	x	-	-	-	x	x	x
1-band Spectrum Analyser	x	x	x	x	-	-	-	x	-	x	-	-	-
3-band Spectrum Analyser	-	-	-	-	x	x	x	-	x	-	x	x	x
12W	-	-	-	-	-	-	-	x	-	x	-	-	-
25W	x	x	x	x	x	x	x	-	x	-	x	x	x
VCD	-	-	-	-	-	-	-	-	-	-	-	-	x
NTC	-	-	-	-	-	-	-	-	-	-	-	-	-
ECO-MTF	x	x	x	x	-	-	-	-	-	-	-	-	-
ETF7	-	-	-	-	x	x	x	x	x	x	x	x	x

MAIN PART - COMPONENT LAYOUT

25 A5 1507 A7 1571 A4 2248 A6 2405 B1 2580 C3 3366 B6 5505 C6 6231 A1 6256 A5 6325 B6 7241 B3 9202 A2 9226 A5 9254 B6 9312 C6 9510 D4 9538 E1
1201 A1 1508 A1 1572 B4 2249 B7 2406 B2 2581 B3 3373 A7 5506 B6 6232 B3 6235 B3 6256 A7 6326 B6 7242 A4 9205 B1 9228 B5 9256 B2 9313 C6 9511 C1 9539 D3
51 C1 1509 F3 2220 A2 2333 D6 2500 C4 3226 B3 3374 D7 5507 C5 6233 B3 6236 B4 6257 A6 6327 A6 7243 A4 9206 B1 9229 B5 9257 B2 9500 B1 9512 C1 9540 D2
52 C1 1510 E2 2221 B3 2334 D6 2501 C4 3256 B3 3391 B7 5508 B7 6234 A5 6236 B6 6258 A6 6328 B6 7245 B4 9207 A3 9230 A5 9258 B2 9501 B2 9513 C2 9541 F3
56 D6 1511 F2 2222 B3 2335 C4 3257 B3 3411 B2 5509 B7 6235 A3 6237 B3 6259 A6 6329 B6 7246 B4 9208 A2 9231 B4 9259 B2 9502 B3 9514 C2 9542 E2
1203 A4 1512 E7 2223 B3 2336 C3 3258 B3 3412 B2 5510 E7 6236 B3 6238 B4 6260 B6 6330 B6 7248 C4 9209 B4 9231 B4 9259 B2 9503 B2 9515 C2 9543 C2
1204 A3 1513 B7 2224 B3 2337 D6 3259 A1 3413 B2 5511 E7 6237 B4 6239 B4 6261 B2 6331 B5 7249 A5 9210 B5 9232 B4 9260 B6 9504 B2 9516 C2 9544 C2
1205 A3 1518 F1 2225 C4 2342 C1 3260 F4 3414 B2 5512 A5 6238 B4 6240 B3 6262 B2 6332 B5 7250 A5 9211 B5 9233 B6 9286 D7 9505 C1 9517 C2 9545 C3
1206 A3 1519 F1 2226 C4 2343 C1 3266 A1 3415 B2 5513 A5 6239 B4 6241 B2 6263 B2 6333 B5 7251 A5 9212 B5 9234 B6 9287 D7 9506 C1 9518 D3 9546 C3
1207 A3 1520 F1 2227 C4 2344 C1 3269 A1 3550 D3 6221 B2 6240 B3 6242 B3 6264 B3 6549 E5 7330 B6 9213 B2 9235 B6 9300 D7 9507 C1 9519 C2 9547 C3
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1210 A2 1562 C6 2229 A1 2350 C6 3538 D3 3553 D3 6224 B3 6243 B3 6245 B4 6267 A6 6552 A7 7402 C5 9216 B4 9238 B7 9303 D7 9510 C1 9522 C1 9554 D2
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1222 A1 1564 A3 2231 A4 2352 C6 3540 D3 3555 D3 6226 B3 6245 B3 6247 B4 6269 A7 6554 A7 7502 D5 9218 A4 9240 B7 9305 D7 9512 C2 9524 C1 9556 D2
1323 C7 1566 B7 2233 A5 2354 A6 3541 D3 3556 D3 6227 B3 6246 B3 6248 B4 6270 A7 6555 A7 7503 D5 9219 B4 9241 B7 9306 D7 9513 C2 9525 C1 9557 D2
1325 B7 1568 A2 2242 B4 2356 B6 3542 D3 3557 D3 6228 B2 6247 B3 6249 B4 6271 A7 6556 A7 7504 D5 9220 B4 9242 B7 9307 D7 9514 C2 9526 C1 9558 D2
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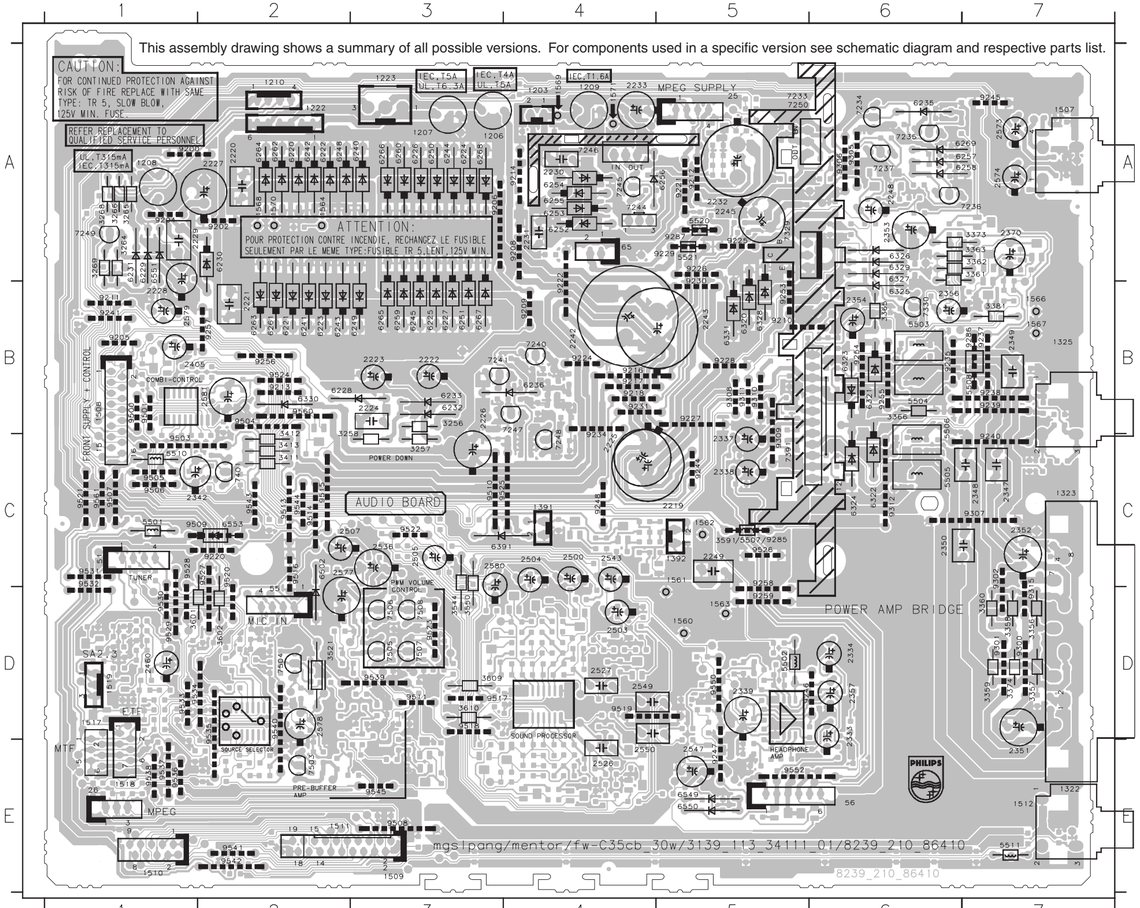
1392 C5 1570 A2 2245 A5 2370 A7 3579 B1 3559 D3 3560 D3 6230 A2 6255 A4 6324 C6 7240 B4 9200 A1 9225 A5 9253 B5 9311 B5 9518 D3 9539 E1 9560 D2


This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.
CAUTION!
FOR CONTINUED PROTECTION AGAINST RISK OF FIRE REPLACE WITH SAME TYPE: TR 5, SLOW BLOW, 125V MIN. FUSE.
REFER REPLACEMENT TO QUALIFIED SERVICE PERSONNEL.
ATTENTION:
POUR PROTECTION CONTRE INCENDIE, REMPLACEZ LE FUSIBLE SEULEMENT PAR LE MEME TYPE:FUSIBLE TR 5,LENT, 125V MIN.
MPEG SUPPLY
AUDIO BOARD
POWER AMP BRIDGE
FRONT SUPPLY + CONTROL
COMBI CONTROL
POWER DOWN
TUNER
MIC IN
MPEG
MTF
PHILIPS
mgs\pang/mentor/fw-C35cb_30w/3139_113_34111_01/8239_210_86410
8239_210_86410

MAIN PART - CHIP LAYOUT

2234 A2 2363 E5 2516 D6 2551 F6 2587 D4 3242 C4 3286 B4 3349 B2 3395 C4 3501 D5 3536 F4 3566 D7 3599 E6 4270 A2 4521 D5 4552 A3 4582 C6 7333 B1
2235 A6 2364 A1 2517 D5 2552 D6 2588 C6 3243 C4 3287 B4 3350 B2 3396 C4 3502 D5 3537 F4 3567 D7 3600 E6 4271 A2 4522 D5 4553 D5 4583 C6 7334 C4
2236 A5 2365 A1 2518 D5 2553 D6 2589 C6 3244 B4 3288 B4 3351 B2 3397 C4 3503 D5 3538 F4 3568 D6 3601 E6 4272 A2 4523 D5 4554 D5 4584 C6 7396 C4
2237 A4 2366 C1 2519 D4 2554 D7 2590 E7 3245 B4 3289 B4 3352 B2 3398 C4 3504 E4 3539 D4 3569 D6 3602 C2 4273 A3 4524 D5 4555 E6 4585 C6 7397 C3
2238 A3 2391 C4 2520 D4 2555 C7 2591 C2 3246 B4 3321 D3 3353 C2 3399 C3 3505 E4 3540 D4 3570 D6 3603 C2 4274 A3 4525 D5 4556 A6 4586 C6 7400 B7
2321 D3 2392 C3 2521 D4 2556 C7 2592 C5 3247 B4 3322 D3 3354 C2 3400 C7 3506 E4 3541 D4 3571 C2 3611 D4 4275 E3 4526 A6 4587 C6 7402 B7
2322 D3 2393 C3 2522 D4 2557 C7 2593 D4 3248 B4 3323 D3 3355 C2 3401 C7 3507 E4 3542 B6 3572 C2 3612 D4 4276 A2 4527 E6 4588 A3 4588 C6 7403 C7
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2334 E3 2465 D7 2534 E6 2569 B7 2605 C4 3260 A5 3335 D3 3367 B2 3413 B7 3519 D4 3554 D4 3584 C2 3624 D6 4288 A4 4539 D5 4600 A2 4600 A2 7510 E5
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2336 D3 2467 D7 2536 E6 2571 B7 2607 C4 3262 A5 3337 D3 3369 B2 3415 B7 3521 D4 3556 D4 3586 C2 3626 D6 4290 A4 4541 D5 4602 A2 4602 A2 7512 E5
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2343 B3 2503 D6 2543 E6 2578 B7 2614 C4 3269 A5 3344 D3 3376 B2 3422 B7 3528 E4 3563 D4 3593 C2 3633 D6 4297 A4 4548 D5 4609 A2 4609 A2 7519 E5
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2353 C3 2513 D5 2553 E6 2588 B7 2624 C4 3279 A5 3354 D3 3386 B2 3432 B7 3538 E4 3573 D4 3603 C2 3643 D6 4307 A4 4558 D5 4619 A2 4619 A2 7529 E5
2354 C3 2514 D5 2554 E6 2589 B7 2625 C4 3280 A5 3355 D3 3387 B2 3433 B7 3539 E4 3574 D4 3604 C2 3644 D6 4308 A4 4559 D5 4620 A2 4620 A2 7530 E5
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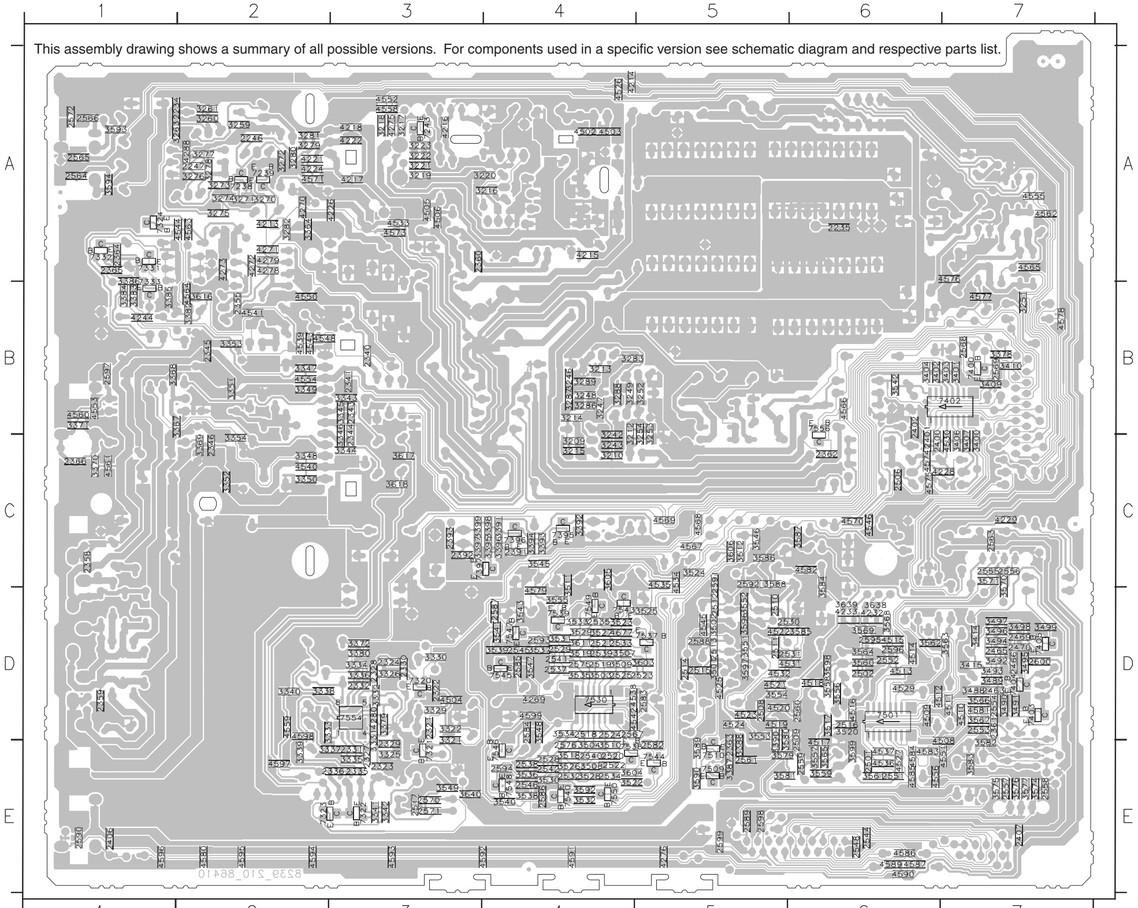
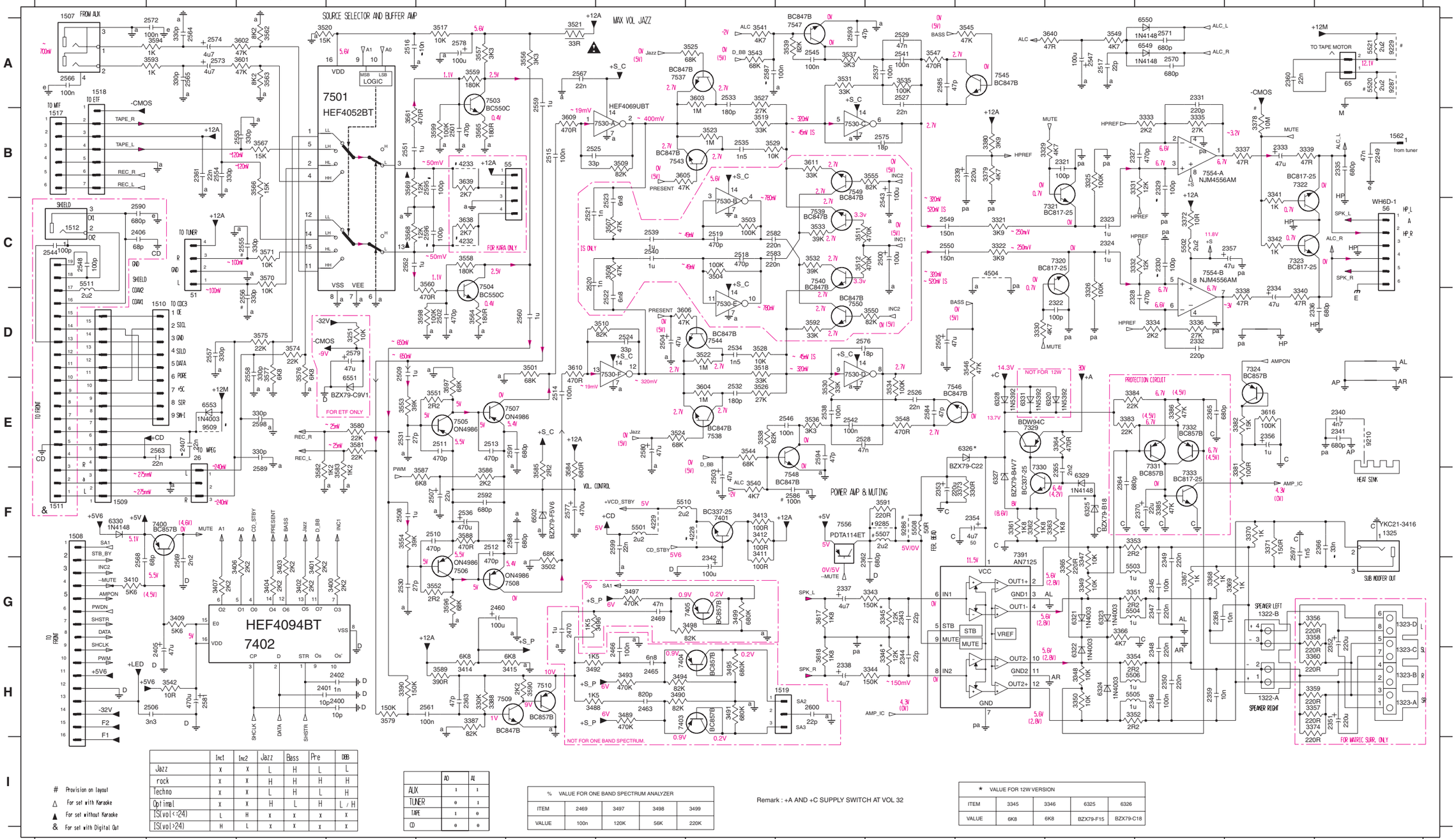
2357 C3 2517 D5 2557 E6 2592 B7 2628 C4 3283 A5 3358 D3 3390 B2 3436 B7 3542 E4 3577 D4 3607 C2 3647 D6 4311 A4 4562 D5 4623 A2 4623 A2 7533 E5
2358 C3 2518 D5 2558 E6 2593 B7 2629 C4 3284 A5 3359 D3 3391 B2 3437 B7 3543 E4 3578 D4 3608 C2 3648 D6 4312 A4 4563 D5 4624 A2 4624 A2 7534 E5
2359 C3 2519 D5 2559 E6 2594 B7 2630 C4 3285 A5 3360 D3 3392 B2 3438 B7 3544 E4 3579 D4 3609 C2 3649 D6 4313 A4 4564 D5 4625 A2 4625 A2 7535 E5
2360 A3 2520 D5 2560 E6 2595 B7 2631 C4 3286 A5 3361 D3 3393 B2 3439 B7 3545 E4 3580 D4 3610 C2 3650 D6 4314 A4 4565 D5 4626 A2 4626 A2 7536 E5
2361 D5 2521 D5 2561 E6 2596 B7 2632 C4 3287 A5 3362 D3 3394 B2 3440 B7 3546 E4 3581 D4 3611 C2 3651 D6 4315 A4 4566 D5 4627 A2 4627 A2 7537 E5
2362 C6 2522 D5 2562 E6 2597 B7 2633 C4 3288 A5 3363 D3 3395 B2 3441 B7 3547 E4 3582 D4 3612 C2 3652 D6 4316 A4 4567 D5 4628 A2 4628 A2 7538 E5


This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.
8239_210_86410

11-3

CIRCUIT DIAGRAM - SOURCE SELECT & AMPLIFIER PART

26 E2 51 D2 55 B5 56 C15 65 A15 1322-A H14 1322-B G14 1323-A H15 1323-B H15 1323-C H15 1323-D G15 1325 F15 1507 A1 1508 F1 1509 F1 1510 D2
1511 F1 1512 C1 1517 B1 1518 A1 1519 H8 1562 B15 2249 B15 2321 B12 2322 D12 2323 C12 2324 C12 2327 B12 2328 D12 2329 B13 2330 C13 2331 A13
2332 D13 2333 B14 2334 D14 2335 B15 2336 D14 2337 G9 2338 H9 2339 B11 2340 E15 2341 E15 2342 G8 2343 G10 2344 H10 2345 G13 2346 H13 2347 G13
2348 H13 2349 G13 2350 H13 2351 H15 2352 G15 2353 F10 2354 F11 2355 F12 2356 E14 2357 C14 2358 G13 2359 H13 2360 A14 2361 B2 2362 G10 2363 H5
2364 F12 2365 E13 2366 F15 2370 F13 2400 H4 2401 H3 2402 H4 2405 H2 2406 C1 2407 E2 2460 G5 2463 H7 2465 H7 2466 H7 2469 G7 2470 G6
2500 C10 2501 B5 2502 D5 2503 F8 2504 D7 2505 D10 2506 H2 2507 F5 2508 F4 2509 D4 2510 F5 2511 E5 2512 F5 2513 E5 2514 E6 2515 B6
2516 A4 2517 A12 2518 C6 2519 C8 2520 C6 2521 C6 2522 D7 2523 C7 2524 D7 2525 B6 2526 E10 2527 A10 2528 E9 2529 A10 2530 G4 2531 E4
2532 E8 2533 A8 2534 D8 2535 B8 2536 F5 2537 A10 2538 E9 2539 C7 2540 C7 2541 A10 2542 E9 2543 C10 2544 C1 2545 A9 2546 E9 2547 A12
2548 C1 2549 C10 2550 C10 2551 B4 2552 C4 2553 B3 2554 B2 2555 C3 2556 D3 2557 D2 2558 D3 2559 A6 2560 D6 2561 H5 2563 E2 2564 A2
2565 A2 2566 A1 2567 A2 2568 G1 2569 G2 2570 A13 2571 A13 2572 A2 2573 A2 2574 A2 2575 B10 2576 D9 2578 A5 2579 D4 2580 E7
2581 H2 2582 C8 2583 C8 2584 E10 2585 A10 2586 F9 2587 A8 2588 F6 2589 E3 2590 C3 2591 E6 2592 F5 2593 A9 2594 E9 2595 B5 2596 C5
2597 F14 2598 E3 2599 F7 2600 H9 3251 D4 3321 C11 3322 C11 3325 B12 3326 D12 3329 B12 3330 D11 3331 B13 3332 C13 3333 B13 3334 D13 3335 B13
3336 D13 3337 B14 3338 D14 3339 B14 3340 D14 3341 C14 3343 G10 3344 H10 3347 G12 3348 H12 3349 G12 3350 H12 3351 G12
3352 H12 3353 F12 3354 H12 3355 F14 3356 G14 3357 H14 3358 G14 3359 H14 3362 F11 3363 F12 3364 E12 3365 G12 3366 G12 3367 G13 3368 G13
3369 G14 3370 F14 3371 F14 3372 C13 3373 F11 3374 H14 3378 B14 3379 B11 3380 B11 3381 F14 3382 E14 3383 E12 3384 E12 3385 F13 3386 E13 3387 H5
3388 H5 3390 H4 3400 G4 3401 G3 3402 G3 3403 G3 3404 G3 3405 H3 3406 G3 3407 G2 3409 G2 3410 G1 3411 F8 3412 F8 3413 F8 3414 H5 3415 H6
3488 H6 3489 H7 3490 H7 3491 H8 3492 H6 3493 H7 3494 H7 3495 H8 3496 G7 3497 G7 3498 G8 3499 G8 3501 D6 3502 G6 3503 C8 3504 C8
3507 C7 3508 C7 3509 B7 3510 D7 3511 C9 3512 C9 3517 A5 3518 D8 3519 B8 3520 A3 3521 A6 3522 D8 3523 B8 3524 E7 3525 A8 3526 E8
3527 A8 3528 D8 3529 B8 3530 E9 3531 A9 3532 C9 3533 C9 3534 E10 3535 A10 3536 E9 3537 A9 3538 E8 3539 A9 3540 F8 3541 A8 3542 H2
3543 A8 3544 E8 3545 A11 3546 D11 3547 A10 3549 A12 3550 D10 3551 E5 3552 G5 3553 E4 3554 F4 3555 B10 3556 A6 3557 A5 3558 C5
3559 A5 3560 C5 3561 B4 3562 A3 3563 A3 3564 D5 3565 B5 3566 B3 3567 B3 3568 C4 3569 B4 3570 C3 3571 C3 3574 D3 3575 D3 3576 D3
3577 D3 3579 H4 3580 E4 3581 E4 3582 F3 3583 F4 3585 F6 3586 F5 3587 F5 3589 H5 3590 H6 3591 F10 3592 D9 3593 A2
3594 A2 3596 G5 3597 E5 3598 D5 3599 B5 3601 A3 3602 A3 3603 A8 3604 E8 3605 B7 3606 D7 3609 B6 3610 D6 3611 B9 3616 E14 3617 G9
3618 H9 3638 C5 3639 B5 3640 A12 4228 F8 4229 F7 4232 C5 4233 B5 4504 C11 5501 F7 5502 C13 5503 G12 5504 G12 5505 H12 5506 H12 5507 F10
5508 F10 5510 F7 5511 C1 5520 A15 5521 A15 6320 E12 6321 G12 6322 H12 6323 G12 6324 H12 6325 F12 6326 E11 6327 F11 6328 E11 6329 F12 6330 F1
6331 E11 6502 F6 6549 A13 6550 A13 6551 E4 6553 E2 7320 C12 7321 C11 7322 B14 7323 C14 7324 D14 7329 E11 7330 E11 7331 E13 7332 E13 7333 F13
7391 F11 7400 F2 7401 F8 7402 H3 7403 H7 7404 H7 7405 G8 7501 A3 7503 A5 7504 D5 7505 E5 7506 G5 7507 E5 7508 G5 7509 H6 7510 H6
7530-A B6 7530-B C8 7530-C B9 7530-D D9 7530-E D8 7530-F D7 7537 A8 7538 E8 7539 C9 7540 C9 7543 B7 7544 D8 7545 A11 7546 E11 7547 A9 7548 F9
7549 B9 7550 D9 7554-A B13 7554-B C13 7556 F9 9210 E15 9229 A15 9285 F10 9286 F10 9287 A15 9509 E2



	Inc1	Inc2	Jazz	Bass	Pre	DBB
Jazz	x	x	L	H	L	L
rock	x	x	H	H	H	H
Techno	x	x	L	H	L	H
Optimal	x	x	H	L	H	L / H
IS(vol<-24)	L	H	x	x	x	x
IS(vol>24)	H	L	x	x	x	x

Provision on layout
Δ For set with Karaoke
▲ For set without Karaoke
& For set with Digital Out

	A0	A1
AUX	1	1
TUNER	0	1
TAPE	1	0
CD	0	0

% VALUE FOR ONE BAND SPECTRUM ANALYZER

ITEM	2469	3497	3498	3499
VALUE	100n	120K	56K	220K

* VALUE FOR 12W VERSION

ITEM	3345	3346	6325	6326
VALUE	6K8	6K8	BZX79-F15	BZX79-C18

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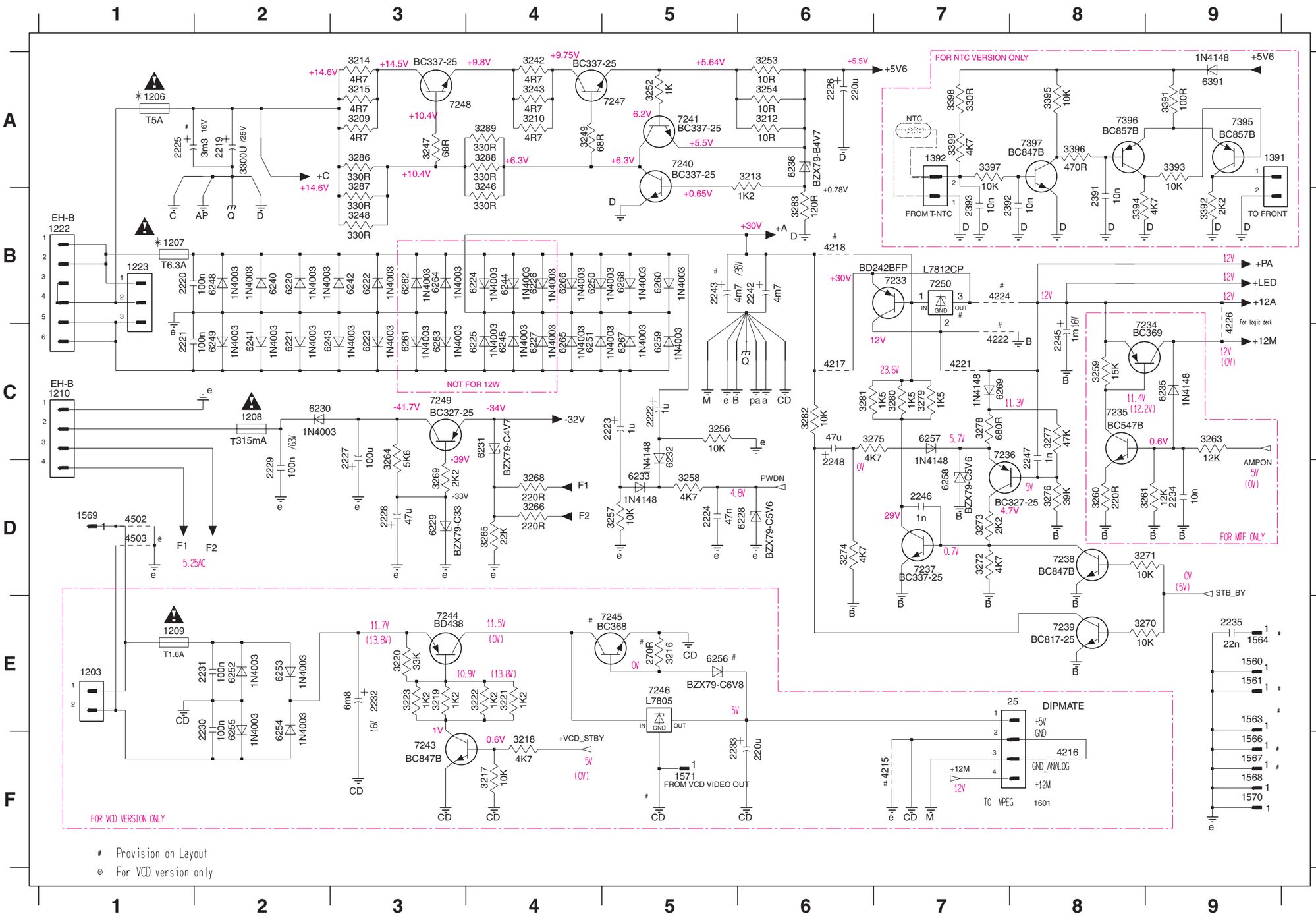
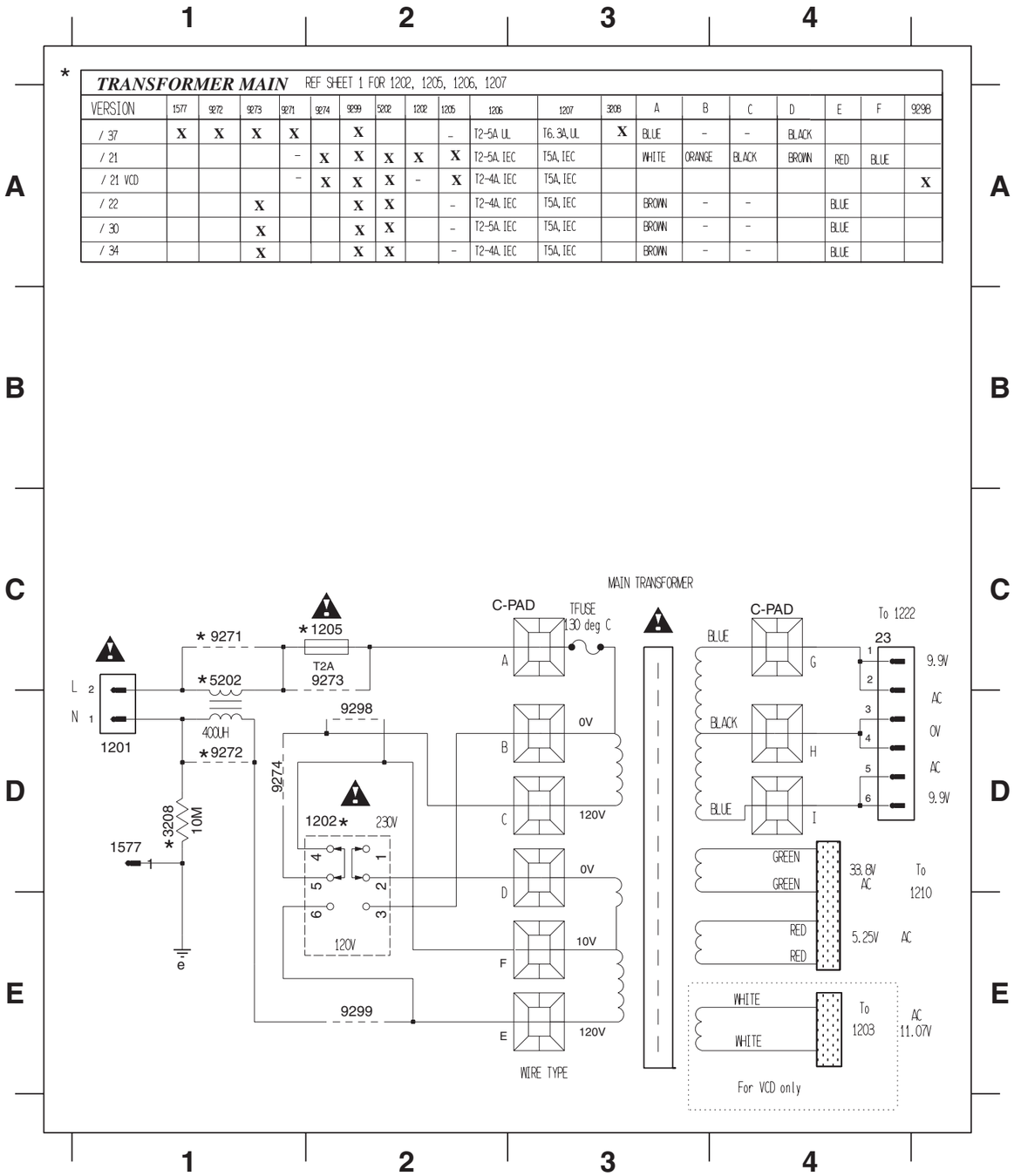
CIRCUIT DIAGRAM - POWER SUPPLY PART



25 E7	3261 D9	6257 C7
1203 E1	3263 C9	6258 D7
1206 A1	3264 C3	6259 C5
1207 B1	3265 D4	6260 B5
1208 C2	3266 D4	6261 C3
1209 E1	3268 D4	6262 B3
1210 C1	3269 D3	6263 C3
1222 B1	3270 E8	6264 B3
1223 B1	3271 D8	6265 C4
1391 A9	3272 D7	6266 B4
1392 A7	3273 D7	6267 C5
1560 E9	3274 D6	6268 B5
1561 E9	3275 C6	6269 C7
1563 E9	3276 D8	6391 A9
1564 E9	3277 C8	7233 B7
1566 F9	3278 C7	7234 B8
1567 F9	3279 C7	7235 C8
1568 F9	3280 C7	7236 C7
1569 D1	3281 C6	7237 D7
1570 F9	3282 C6	7238 D8
1571 F5	3283 B6	7239 E8
2219 A2	3286 A3	7240 A5
2220 B1	3287 B3	7241 A5
2221 C1	3288 A4	7243 F3
2222 C5	3289 A4	7244 E3
2223 C5	3391 A9	7245 E4
2224 D5	3392 B9	7246 E5
2225 A1	3393 A9	7247 A5
2226 A6	3394 B8	7248 A3
2227 C3	3395 A8	7249 C3
2228 D3	3396 A8	7250 B7
2229 D2	3397 A7	7395 A9
2230 E2	3398 A7	7396 A8
2231 E2	3399 A7	7397 A8
2232 E3	4215 F7	
2233 F5	4216 F8	
2234 D9	4217 C6	
2235 E9	4218 B6	
2242 B6	4221 C7	
2243 B5	4222 C7	
2245 C8	4224 B7	
2246 D7	4226 B9	
2247 C8	4502 D1	
2248 C6	4503 D1	
2391 B8	6220 B2	
2392 B8	6221 C2	
2393 B7	6222 B3	
3209 A3	6223 C3	
3210 A4	6224 B4	
3212 A6	6225 C4	
3213 A6	6226 B4	
3214 A3	6227 C4	
3215 A3	6228 D5	
3216 E5	6229 D3	
3217 F4	6230 C2	
3218 F4	6231 C4	
3219 E3	6232 C5	
3220 E3	6233 D5	
3221 E4	6235 C9	
3222 E4	6236 A6	
3223 E3	6240 B2	
3242 A4	6241 C2	
3243 A4	6242 B3	
3246 B4	6243 C3	
3247 A3	6244 B4	
3248 B3	6245 C4	
3249 A4	6248 B2	
3252 A5	6249 C2	
3253 A6	6250 B4	
3254 A6	6251 C4	
3256 C5	6252 E2	
3257 D5	6253 E2	
3258 D5	6254 E2	
3259 C8	6255 E2	
3260 D8	6256 E5	

CIRCUIT DIAGRAM - TRANSFORMER PRIMARY PART

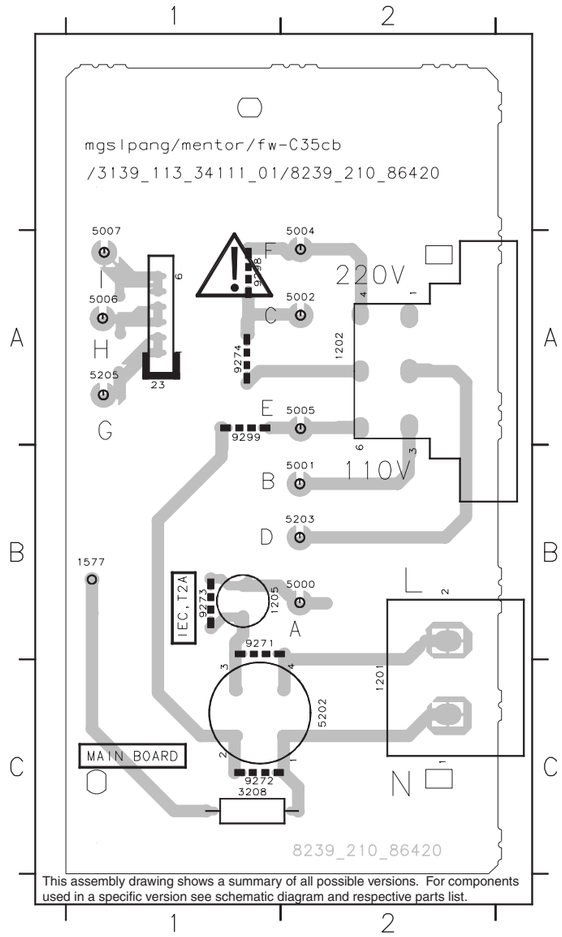
23 C4 1202 D1 1577 D1 5202 C1 9272 D1 9274 D1 9299 E2
1201 D1 1205 C2 3208 D1 9271 C1 9273 C2 9298 D2



VERSION	1577	9272	9273	9271	9274	9299	5202	1202	1205	1206	1207	3208	A	B	C	D	E	F	9298
/ 37	X	X	X	X		X			–	T2-5A UL	T6.3A UL	X	BLUE	–	–	BLACK			
/ 21				–	X	X	X	X	X	T2-5A IEC	T5A IEC		WHITE	ORANGE	BLACK	BROWN	RED	BLUE	
/ 21 VCD				–	X	X	X	–	X	T2-4A IEC	T5A IEC								X
/ 22			X			X	X		–	T2-4A IEC	T5A IEC		BROWN	–	–		BLUE		
/ 30			X			X	X		–	T2-5A IEC	T5A IEC		BROWN	–	–		BLUE		
/ 34			X			X	X		–	T2-4A IEC	T5A IEC		BROWN	–	–		BLUE		

LAYOUT DIAGRAM - TRANSFORMER PRIMARY PART

23 A1 1577 B1 5002 A2 5007 A1 9271 B1 9298 A1
1201 C2 3208 C1 5004 A2 5202 C2 9272 C1 9299 A1
1202 A2 5000 B2 5005 A2 5203 B2 9273 B1
1205 B1 5001 B2 5006 A1 5205 A1 9274 A1



This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

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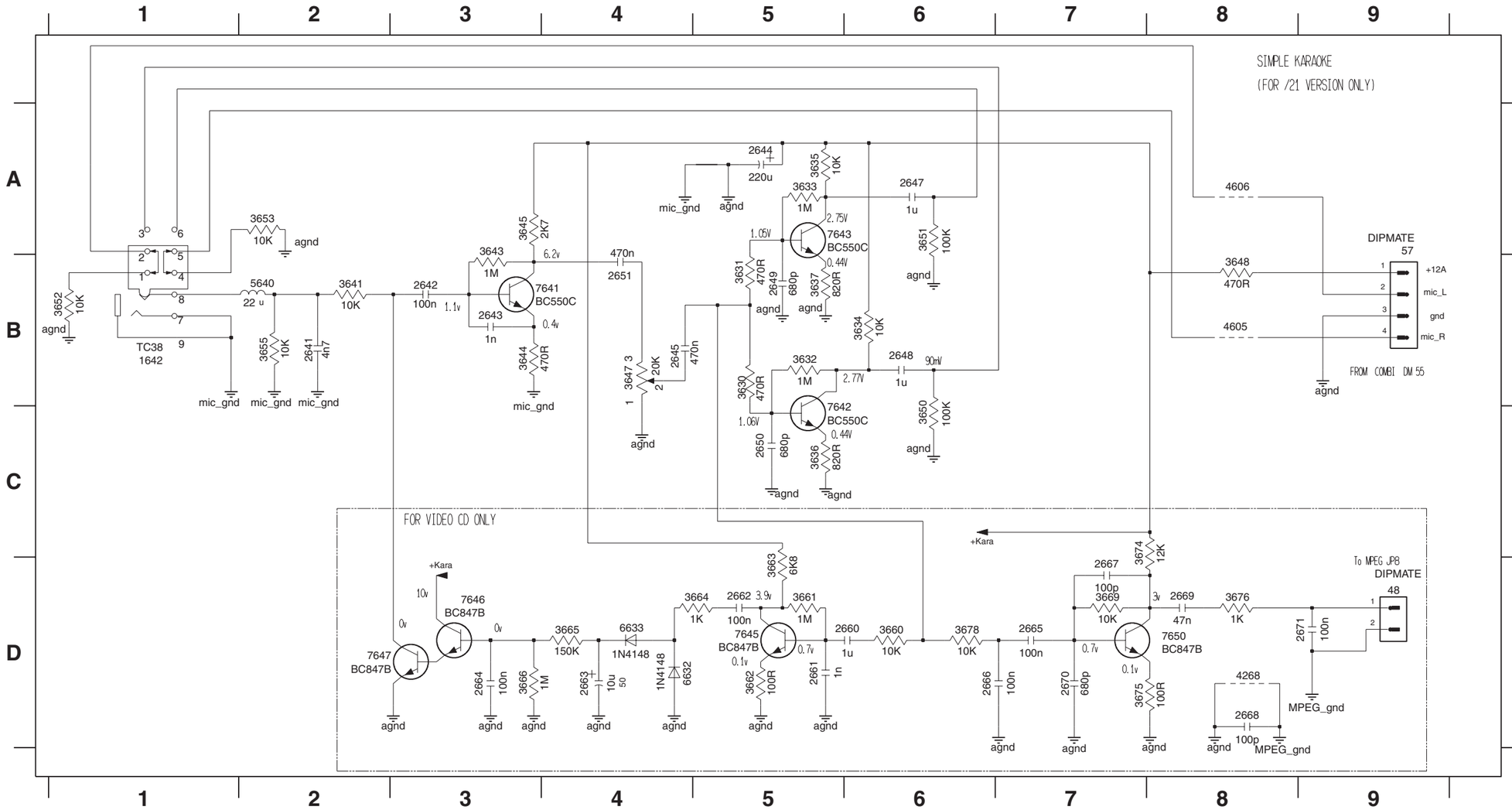
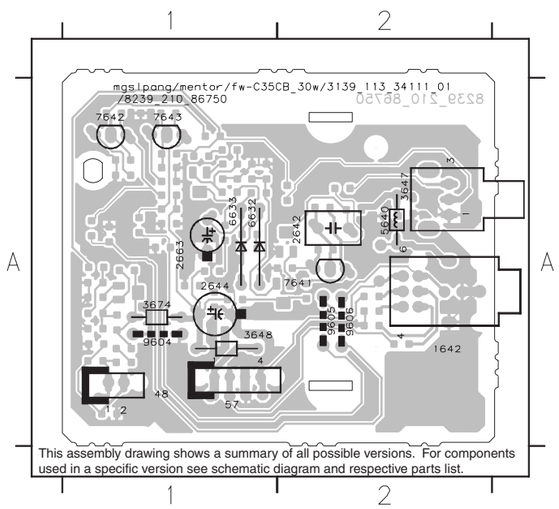
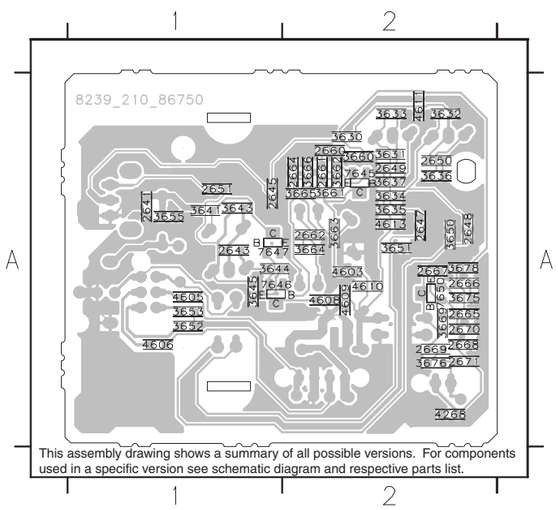
CIRCUIT & LAYOUT DIAGRAMS - KARAOKE PART



48 D9 5640 B2
57 A9 6632 D4
1642 B1 6633 D4
2641 B2 7641 B3
2642 B3 7642 C5
2643 B3 7643 A5
2644 A5 7645 D5
2645 B4 7646 D3
2647 A6 7647 D3
2648 B6 7650 D8
2649 B5
2650 C5
2651 B4
2660 D6
2661 D5
2662 D5
2663 D4
2664 D3
2665 D7
2666 D6
2667 D7
2668 D8
2669 D8
2670 D7
2671 D9
3630 B5
3631 B5
3632 B5
3633 A5
3634 B6
3635 A5
3636 C5
3637 B5
3641 B2
3643 B3
3644 B3
3645 A3
3647 B4
3648 B8
3650 C6
3651 A6
3652 B1
3653 A2
3655 B2
3660 D6
3661 D5
3662 D5
3663 D5
3664 D5
3665 D4
3666 D3
3669 D7
3674 C7
3675 D7
3676 D8
3678 D6
4268 D8
4605 B8
4606 A8

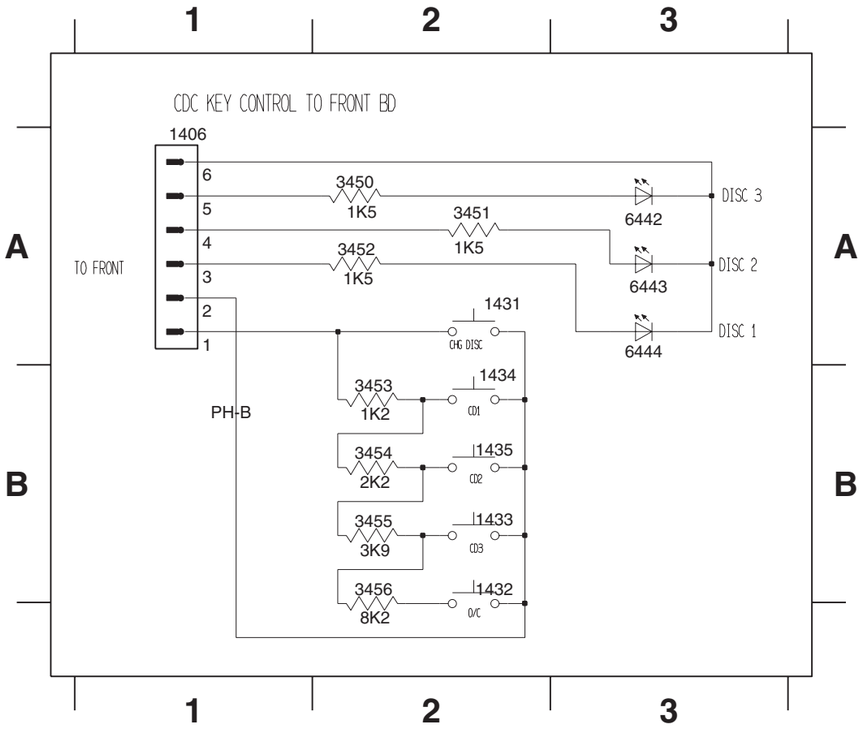

mgslpang/mentor/fw-C35CB_30w/3139_113_34111_01
/8239_210_86750
This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

48 A1
57 A1
1642 A2
2642 A2
2644 A1
2663 A1
3647 A2
3648 A1
3674 A1
5640 A2
6632 A1
6633 A1
7641 A2
7642 A1
7643 A1
9604 A1
9605 A2
9606 A2


8239_210_86750
This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

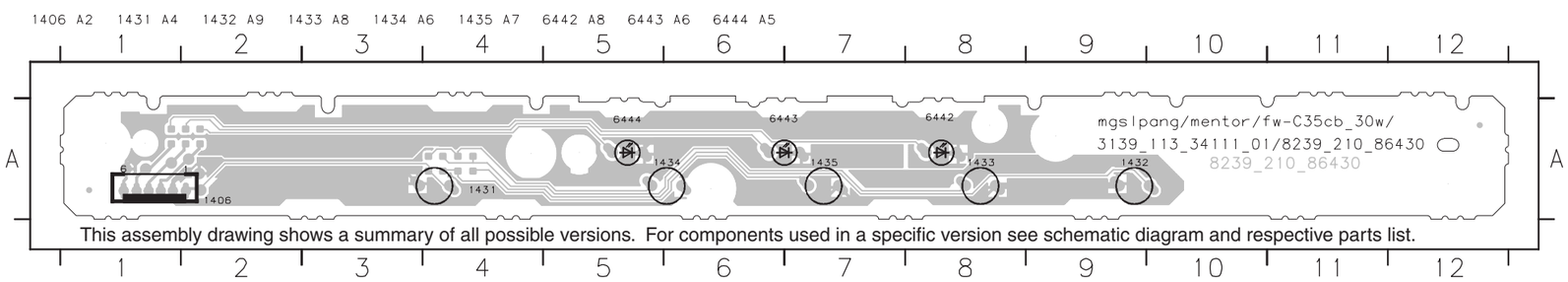
2641 A1
2643 A1
2645 A1
2647 A2
2648 A2
2649 A2
2650 A2
2651 A1
2660 A2
2661 A2
2662 A2
2664 A2
2665 A2
2666 A2
2667 A2
2668 A2
2669 A2
2670 A2
2671 A2
3630 A2
3631 A2
3632 A2
3633 A2
3634 A2
3635 A2
3636 A2
3637 A2
3641 A1
3643 A1
3644 A1
3645 A1
3650 A2
3651 A2
3652 A1
3653 A1
3655 A1
3660 A2
3661 A2
3662 A2
3663 A2
3664 A2
3665 A2
3666 A2
3669 A2
3675 A2
3676 A2
3678 A2
4268 A2
4603 A2
4605 A1
4606 A1
4608 A2
4609 A2
4610 A2
4611 A2
4613 A2
7645 A2
7646 A1
7647 A1
7650 A2

CIRCUIT & LAYOUT DIAGRAMS - CDC KEY PART



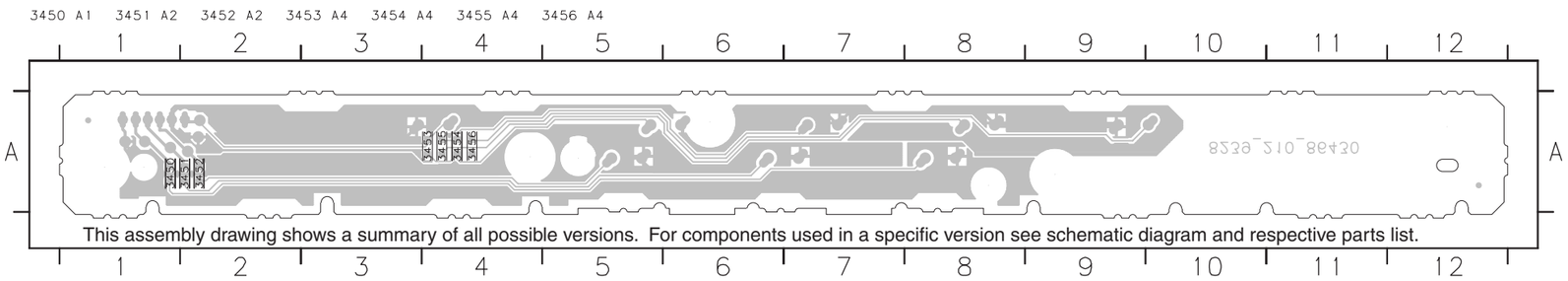
1406 A1
1431 A2
1432 B2
1433 B2
1434 B2
1435 B2
3450 A2
3451 A2
3452 A2
3453 B2
3454 B2
3455 B2
3456 B2
6442 A3
6443 A3
6444 A3

1406 A2 1431 A4 1432 A9 1433 A8 1434 A6 1435 A7 6442 A8 6443 A6 6444 A5



This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

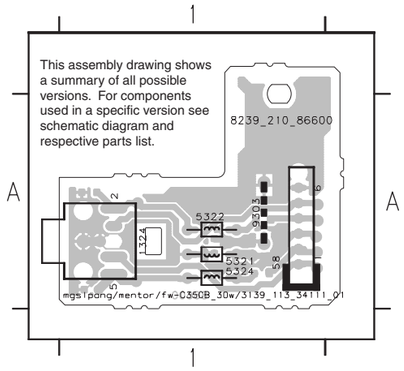
3450 A1 3451 A2 3452 A2 3453 A4 3454 A4 3455 A4 3456 A4



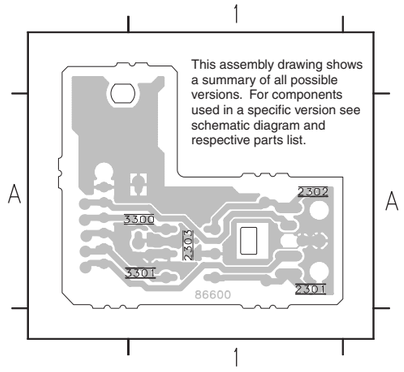
This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

CIRCUIT & LAYOUT DIAGRAMS - HEADPHONE PART

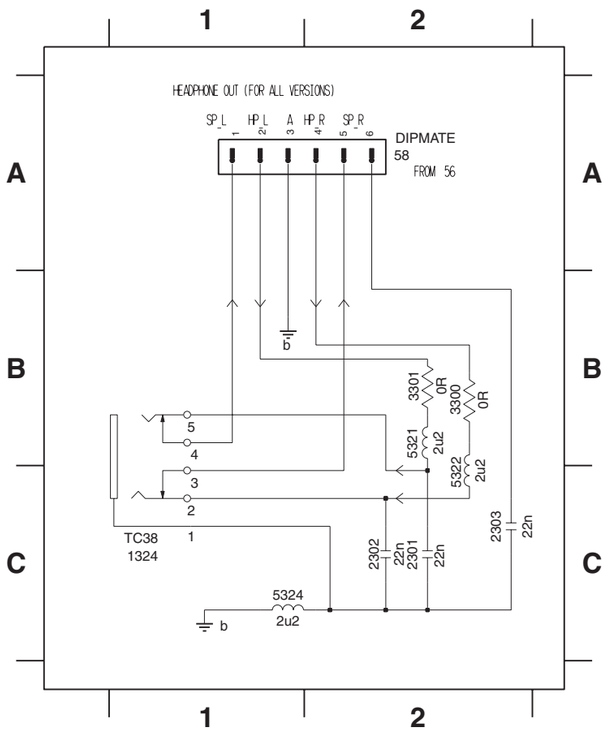
58 A1 5321 A1 5324 A1
1324 A1 5322 A1 9303 A1



2301 A1 2303 A1 3301 A1
2302 A1 3300 A1


This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.
2302
3300
2303
3301
2301
86600

58 A2 2301 C2 2303 C2 3301 B2 5322 C2
1324 C1 2302 C2 3300 B2 5321 B2 5324 C1



ELECTRICAL PARTS LIST - COMBI BOARD

MISCELLANEOUS

1201	482226531015	⚠	Mains Socket /21/21M/30
1201	482226531016	⚠	Mains Socket /37
1202	482227210269	⚠	Voltage Selector /21/21M
1205	482207152002	⚠	Fuse T2A 250V /21/21M
1206	482207155002	⚠	Fuse T5A 250V
1207	482207155002	⚠	Fuse T5A 250V /21/21M/30
1207	482225251123	⚠	Fuse T6,3A 250V /37
1208	482207153151	⚠	Fuse T315mA 250V /21/21M/30
1208	482225251151	⚠	Fuse T315mA 250V /37
1322	482226731176		Loudspeaker Socket L/R
1323	242201518280		Loudspeaker Socket Matrix
1324	482226511547		Headphone Socket
1325	482226731729		Sub-woofer out Socket
1431	482227613775		Tact Switch
1432	482227613775		Tact Switch
1433	482227613775		Tact Switch
1434	482227613775		Tact Switch
1435	482227613775		Tact Switch
1507	482226520553		Aux-in Socket
1508	242202514526		Flex Socket 16pin Vert.
1509	482226510981		Flex Socket 15pin Vert.
1510	482226511532		Flex Socket 9pin Vert.
1517	482226710731		Flex Socket 6pin Vert.
1642	482226511529		Mic Socket /21/21M

CAPACITORS

2219	482212442367	3300µF 20% 35V
2220	532212142386	100nF 5% 63V
2221	532212142386	100nF 5% 63V
2222	482212421913	1µF 20% 63V
2223	482212421913	1µF 20% 63V
2224	482212143526	47nF 5% 250V
2226	482212480144	220µF 20% 25V
2227	482212440255	100µF 20% 63V
2228	482212441751	47µF 20% 50V
2229	532212142386	100nF 5% 63V
2234	532212234098	10nF 10% 63V
2242	482212480415	4700µF 20% 50V
2245	482212481144	1000µF 20% 16V
2246	532212231647	1nF 10% 63V
2247	532212231647	1nF 10% 63V
2248	482212440433	47µF 20% 25V
2249	482212143526	47nF 5% 250V
2301	532212232654	22nF 10% 63V
2302	532212232654	22nF 10% 63V
2303	532212232654	22nF 10% 63V
2321	532212232531	100pF 5% 50V
2322	532212232531	100pF 5% 50V
2323	482212614043	1µF +80/-20% 16V
2324	482212614043	1µF +80/-20% 16V
2327	532212234099	470pF 10% 63V
2328	532212234099	470pF 10% 63V
2331	482212233575	220pF 5% 63V
2332	482212233575	220pF 5% 63V
2333	482212440433	47µF 20% 25V
2334	482212440433	47µF 20% 25V
2335	482212232535	680pF 10% 63V
2336	482212232535	680pF 10% 63V
2337	482212440769	4,7µF 20% 100V
2338	482212440769	4,7µF 20% 100V
2339	482212480144	220µF 20% 25V
2340	532212610223	4,7nF 10% 63V
2341	482212232535	680pF 10% 63V
2342	482212440207	100µF 20% 25V
2343	532212232658	22pF 5% 50V
2344	532212232658	22pF 5% 50V
2345	482212614585	100nF 10% 50V
2346	482212614585	100nF 10% 50V
2347	482212142408	220nF 5% 63V
2348	482212142408	220nF 5% 63V
2349	482212142408	220nF 5% 63V
2350	482212142408	220nF 5% 63V
2351	482212480144	220µF 20% 25V
2352	482212480144	220µF 20% 25V
2353	482212480144	220µF 20% 25V
2354	482212440769	4,7µF 20% 100V
2355	482212233127	2,2nF 10% 63V
2356	482212421913	1µF 20% 63V
2357	482212440433	47µF 20% 25V
2358	482212233177	10nF 20% 50V
2359	482212233177	10nF 20% 50V
2360	532212232654	22nF 10% 63V
2361	532212232654	22nF 10% 63V
2362	482212232535	680pF 10% 63V
2363	482212613692	47pF 1% 63V
2364	482212232535	680pF 10% 63V
2365	482212232535	680pF 10% 63V
2370	482212481151	22µF 20% 50V
2400	532212232448	10pF 5% 63V
2401	532212232448	10pF 5% 63V
2402	532212231647	1nF 10% 63V
2405	482212440433	47µF 20% 25V
2460	482212440207	100µF 20% 25V
2469	482212614585	100nF 10% 50V
2501	532212232268	470pF 10% 50V
2502	532212232268	470pF 10% 50V
2503	482212440433	47µF 20% 25V
2504	482212440433	47µF 20% 25V
2505	482212440433	47µF 20% 25V
2506	482212233891	3,3nF 10% 63V
2507	482212481151	22µF 20% 50V
2508	482212614043	1µF +80/-20% 16V
2509	482212614043	1µF +80/-20% 16V
2510	532212234099	470pF 10% 63V
2511	532212234099	470pF 10% 63V
2512	532212234099	470pF 10% 63V
2513	532212234099	470pF 10% 63V
2514	482212614585	100nF 10% 50V
2515	482212614585	100nF 10% 50V
2517	532212232658	22pF 5% 50V
2524	532212232659	33pF 5% 50V
2525	532212232659	33pF 5% 50V
2526	482212141856	22nF 5% 250V
2527	482212141856	22nF 5% 250V
2528	482212613751	47nF 10% 63V
2529	482212613751	47nF 10% 63V
2530	482212613691	27pF 1% 63V
2531	482212613691	27pF 1% 63V
2532	482212610326	180pF 5% 63V
2533	482212610326	180pF 5% 63V
2534	532212231865	1,5nF 10% 63V
2535	532212231865	1,5nF 10% 63V
2536	482212480195	470µF 20% 10V
2537	482212613838	100nF +80/-20% 50V
2538	482212613838	100nF +80/-20% 50V
2541	482212613838	100nF +80/-20% 50V
2542	482212613838	100nF +80/-20% 50V
2545	482212613838	100nF +80/-20% 50V
2546	482212613838	100nF +80/-20% 50V
2547	482212440207	100µF 20% 25V
2549	482212141854	150nF 5% 63V
2550	482212141854	150nF 5% 63V
2551	482212614043	1µF +80/-20% 16V
2552	482212614043	1µF +80/-20% 16V
2553	532212231863	330pF 5% 63V
2554	532212231863	330pF 5% 63V
2557	532212231863	330pF 5% 63V
2558	532212231863	330pF 5% 63V
2559	482212614043	1µF +80/-20% 16V
2560	482212614043	1µF +80/-20% 16V
2561	482212614585	100nF 10% 50V
2563	532212232654	22nF 10% 63V
2564	532212231863	330pF 5% 63V
2565	532212231863	330pF 5% 63V
2566	482212613838	100nF +80/-20% 50V
2567	532212232654	22nF 10% 63V
2568	482212613694	68pF 1% 63V
2569	482212233127	2,2nF 10% 63V
2570	482212232535	680pF 10% 63V
2571	482212232535	680pF 10% 63V
2572	482212613838	100nF +80/-20% 50V
2573	482212440769	4,7µF 20% 100V
2574	482212440769	4,7µF 20% 100V
2575	482212613689	18pF 1% 63V
2576	482212613689	18pF 1% 63V
2577	482212480195	470µF 20% 10V
2578	482212440207	100µF 20% 25V
2580	482212440433	47µF 20% 25V
2581	482212480791	470µF 20% 16V
2584	482212613692	47pF 1% 63V
2585	482212613692	47pF 1% 63V
2588	482212232535	680pF 10% 63V
2589	532212231863	330pF 5% 63V
2591	482212232535	680pF 10% 63V
2592	482212232535	680pF 10% 63V
2593	482212613692	47pF 1% 63V
2594	482212613692	47pF 1% 63V
2597	532212231865	1,5nF 10% 63V
2598	532212231863	330pF 5% 63V
2599	532212232654	22nF 10% 63V
2641	532212610223	4,7nF 10% 63V
2642	532212142386	100nF 5% 63V
2643	532212231647	1nF 10% 63V
2644	482212480144	220µF 20% 25V
2645	482212441407	0,47µF 20% 63V
2647	482212421913	1µF 20% 63V
2648	482212421913	1µF 20% 63V
2649	482212232535	680pF 10% 63V
2650	482212232535	680pF 10% 63V
2651	482212441407	0,47µF 20% 63V

RESISTORS

3208	482205321106	10M 5% 0,5W
3209	482205120478	4R7 5% 0,1W
3210	482205120478	4R7 5% 0,1W
3212	482205120109	10R 5% 0,1W
3213	482205120122	1k2 5% 0,1W
3214	482205120478	4R7 5% 0,1W
3215	482205120478	4R7 5% 0,1W
3242	482205120478	4R7 5% 0,1W
3243	482205120478	4R7 5% 0,1W
3246	482211713577	330R 1% 0,1W
3247	482211712521	68R 1% 0,1W
3248	482211713577	330R 1% 0,1W
3249	482211712521	68R 1% 0,1W
3252	482205110102	1k 2% 0,25W
3253	482205120109	10R 5% 0,1W
3254	482205120109	10R 5% 0,1W
3256	482205021003	10k 1% 0,6W
3257	482205021003	10k 1% 0,6W
3258	482211652283	4k7 5% 0,5W
3259	482211683933	15k 1% 0,1W
3260	482211711503	220R 1% 0,1W
3261	482211711383	12k 1% 0,1W
3263	482211711383	12k 1% 0,1W
3264	482211652289	5k6 5% 0,5W
3265	482211652257	22k 5% 0,5W
3266	482211683872	220R 5% 0,5W

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ELECTRICAL PARTS LIST - COMBI BOARD

ELECTRICAL PARTS LIST - COMBI BOARD

RESISTORS

3268	482211683872	220R 5% 0,5W
3269	482211652256	2k2 5% 0,5W
3270	482211710833	10k 1% 0,1W
3271	482211710833	10k 1% 0,1W
3272	482205120472	4k7 5% 0,1W
3273	482211711449	2k2 1% 0,1W
3274	482205120472	4k7 5% 0,1W
3275	482205120472	4k7 5% 0,1W
3276	482205120393	39k 5% 0,1W
3277	482211710834	47k 1% 0,1W
3278	482211710361	680R 1% 0,1W
3279	482211711139	1k5 1% 0,1W
3280	482211711139	1k5 1% 0,1W
3281	482211711139	1k5 1% 0,1W
3282	482211710833	10k 1% 0,1W
3283	482205120121	120R 5% 0,1W
3286	482211713577	330R 1% 0,1W
3287	482211713577	330R 1% 0,1W
3288	482211713577	330R 1% 0,1W
3289	482211713577	330R 1% 0,1W
3300	482205120008	0R Jumper 0805
3301	482205120008	0R Jumper 0805
3321	482205120392	3k9 5% 0,1W
3322	482205120392	3k9 5% 0,1W
3325	482211710837	100k 1% 0,1W
3326	482211710837	100k 1% 0,1W
3329	482205120472	4k7 5% 0,1W
3330	482205120472	4k7 5% 0,1W
3331	482211711383	12k 1% 0,1W
3332	482211711383	12k 1% 0,1W
3333	482211711449	2k2 1% 0,1W
3334	482211711449	2k2 1% 0,1W
3335	482205120273	27k 5% 0,1W
3336	482205120273	27k 5% 0,1W
3337	482205120479	47R 5% 0,1W
3338	482205120479	47R 5% 0,1W
3339	482205120479	47R 5% 0,1W
3340	482205120479	47R 5% 0,1W
3341	482205110102	1k 2% 0,25W
3342	482205110102	1k 2% 0,25W
3343	482205120154	150k 5% 0,1W
3344	482205120154	150k 5% 0,1W
3345	482211711383	12k 1% 0,1W
3346	482211711383	12k 1% 0,1W
3347	482211710833	10k 1% 0,1W
3348	482211710833	10k 1% 0,1W
3349	482211710833	10k 1% 0,1W
3350	482211710833	10k 1% 0,1W
3351	482205120228	2R2 5% 0,1W
3352	482205120228	2R2 5% 0,1W
3353	482205120228	2R2 5% 0,1W
3354	482205120228	2R2 5% 0,1W
3356	482211683872	220R 5% 0,5W
3357	482211683872	220R 5% 0,5W
3358	482211683872	220R 5% 0,5W
3359	482211683872	220R 5% 0,5W
3360	482211683872	220R 5% 0,5W
3361	482211652249	1k8 5% 0,5W
3362	482211652249	1k8 5% 0,5W
3363	482211652249	1k8 5% 0,5W
3364	482205120471	470R 5% 0,1W
3365	482211683872	220R 5% 0,5W
3366	482211652283	4k7 5% 0,5W
3367	482205110102	1k 2% 0,25W
3368	482205110102	1k 2% 0,25W
3369	482205110102	1k 2% 0,25W
3370	482205110102	1k 2% 0,25W
3371	482211710353	150R 1% 0,1W
3372	482205120109	10R 5% 0,1W
3373	482211652219	330R 5% 0,5W
3374	482211683872	220R 5% 0,5W
3379	482205120472	4k7 5% 0,1W
3380	482205120392	3k9 5% 0,1W
3381	482211652175	100R 5% 0,5W
3382	482211683933	15k 1% 0,1W
3383	482205120223	22k 5% 0,1W
3384	482205120223	22k 5% 0,1W
3385	482211710834	47k 1% 0,1W
3386	482211710834	47k 1% 0,1W
3387	482211711149	82k 1% 0,1W
3388	482205120334	330k 5% 0,1W
3390	482205120154	150k 5% 0,1W
3400	482211711449	2k2 1% 0,1W
3401	482211711449	2k2 1% 0,1W
3402	482211711449	2k2 1% 0,1W
3403	482211711449	2k2 1% 0,1W
3404	482211711449	2k2 1% 0,1W
3406	482211711449	2k2 1% 0,1W
3407	482211711449	2k2 1% 0,1W
3409	482205120562	5k6 5% 0,1W
3410	482205120562	5k6 5% 0,1W
3411	482211652175	100R 5% 0,5W
3412	482211652175	100R 5% 0,5W
3413	482211652175	100R 5% 0,5W
3414	482211711507	6k8 1% 0,1W
3415	482211711507	6k8 1% 0,1W
3450	482211711139	1k5 1% 0,1W
3451	482211711139	1k5 1% 0,1W
3452	482211711139	1k5 1% 0,1W
3453	482205120122	1k2 5% 0,1W
3454	482211711449	2k2 1% 0,1W
3455	482205120392	3k9 5% 0,1W
3456	482205120822	8k2 5% 0,1W
3496	482211711139	1k5 1% 0,1W
3497	482205120124	120k 5% 0,1W
3498	482211711148	56k 1% 0,1W
3499	482211713579	220k 1% 0,1W
3501	482205120683	68k 5% 0,1W
3502	482205120683	68k 5% 0,1W
3509	482211711149	82k 1% 0,1W
3510	482211711149	82k 1% 0,1W
3517	482211710833	10k 1% 0,1W
3518	482205120333	33k 5% 0,1W
3519	482205120333	33k 5% 0,1W
3520	482211683933	15k 1% 0,1W
3521	482205210339	⚠ 33R 5% 0,33W
3522	482205120105	1M 5% 0,1W
3523	482205120105	1M 5% 0,1W
3524	482205120683	68k 5% 0,1W
3525	482205120683	68k 5% 0,1W
3526	482205120273	27k 5% 0,1W
3527	482205120273	27k 5% 0,1W
3528	482211710833	10k 1% 0,1W
3529	482211710833	10k 1% 0,1W
3530	482205120333	33k 5% 0,1W
3531	482205120333	33k 5% 0,1W
3534	482211710837	100k 1% 0,1W
3535	482211710837	100k 1% 0,1W
3536	482205120332	3k3 5% 0,1W
3537	482205120332	3k3 5% 0,1W
3538	482211711149	82k 1% 0,1W
3539	482211711149	82k 1% 0,1W
3540	482205120472	4k7 5% 0,1W
3541	482205120472	4k7 5% 0,1W
3542	482205120109	10R 5% 0,1W
3543	482205120683	68k 5% 0,1W
3544	482211652297	68k 5% 0,5W
3545	482211710834	47k 1% 0,1W
3546	482211710834	47k 1% 0,1W
3547	482205120471	470R 5% 0,1W
3548	482205120471	470R 5% 0,1W
3549	482205120472	4k7 5% 0,1W
3551	482205120228	2R2 5% 0,1W
3552	482205120228	2R2 5% 0,1W
3553	482205120393	39k 5% 0,1W
3554	482205120393	39k 5% 0,1W
3556	482205120332	3k3 5% 0,1W
3557	482205120332	3k3 5% 0,1W
3558	482205120184	180k 5% 0,1W
3559	482205120184	180k 5% 0,1W
3560	482205120471	470R 5% 0,1W
3561	482205120471	470R 5% 0,1W
3562	482205120822	8k2 5% 0,1W
3563	482205120822	8k2 5% 0,1W
3564	482211711448	180R 1% 0,1W
3565	482211711448	180R 1% 0,1W
3566	482211683933	15k 1% 0,1W
3567	482211683933	15k 1% 0,1W
3568	482211711383	12k 1% 0,1W
3569	482211711383	12k 1% 0,1W
3570	482211710833	10k 1% 0,1W
3571	482211710833	10k 1% 0,1W
3574	482205120223	22k 5% 0,1W
3575	482205120223	22k 5% 0,1W
3576	482211711507	6k8 1% 0,1W
3577	482211711507	6k8 1% 0,1W
3579	482205120154	150k 5% 0,1W
3580	482205120223	22k 5% 0,1W
3581	482205120223	22k 5% 0,1W
3582	482205120122	1k2 5% 0,1W
3583	482205120122	1k2 5% 0,1W
3584	482211710361	680R 1% 0,1W
3585	482205120228	2R2 5% 0,1W
3586	482211711449	2k2 1% 0,1W
3587	482211711507	6k8 1% 0,1W
3588	482205120471	470R 5% 0,1W
3589	482205120391	390R 5% 0,1W
3590	482211711449	2k2 1% 0,1W
3591	482211683883	220R 5% 0,5W
3593	482205110102	1k 2% 0,25W
3594	482205110102	1k 2% 0,25W
3596	482205120683	68k 5% 0,1W
3597	482205120683	68k 5% 0,1W
3598	482211710837	100k 1% 0,1W
3599	482211710837	100k 1% 0,1W
3601	482211683884	47k 5% 0,5W
3602	482211683884	47k 5% 0,5W
3603	482205120105	1M 5% 0,1W
3604	482205120105	1M 5% 0,1W
3605	482211710834	47k 1% 0,1W
3606	482211710834	47k 1% 0,1W
3609	482211683883	470R 5% 0,5W
3610	482211683883	470R 5% 0,5W
3616	482211710837	100k 1% 0,1W
3617	482205120182	1k8 5% 0,1W
3618	482205120182	1k8 5% 0,1W
3630	482205120471	470R 5% 0,1W
3631	482205120471	470R 5% 0,1W
3632	482205120105	1M 5% 0,1W
3633	482205120105	1M 5% 0,1W
3634	482211710833	10k 1% 0,1W
3635	482211710833	10k 1% 0,1W
3636	482211711454	820R 1% 0,1W
3637	482211711454	820R 1% 0,1W
3638	482211712955	2k7 1% 0,1
3639	482211712955	2k7 1% 0,1
3640	482205120479	47R 5% 0,1W
3641	482211710833	10k 1% 0,1W

RESISTORS

3643	482205120105	1M 5% 0,1W
3644	482205120471	470R 5% 0,1W
3645	482211712955	2k7 1% 0,1W
3647	482210121204	Potm Rotary 20KA
3648	482211683883	470R 5% 0,5W
3650	482211710837	100k 1% 0,1W
3651	482211710837	100k 1% 0,1W
3652	482211710833	10k 1% 0,1W
3653	482211710833	10k 1% 0,1W
3655	482211710833	10k 1% 0,1W
3656	482205120008	0R Jumper 0805
3657	482205120008	0R Jumper 0805
4214	482205120008	0R Jumper 0805
4215	482205120008	0R Jumper 0805
4217	482205120008	0R Jumper 0805
4221	482205120008	0R Jumper 0805
4229	482205120008	0R Jumper 0805
4244	482205120008	0R Jumper 0805
4268	482205120008	0R Jumper 0805
4269	482205120008	0R Jumper 0805
4270	482205120008	0R Jumper 0805
4271	482205120008	0R Jumper 0805
4272	482205120008	0R Jumper 0805
4273	482205120008	0R Jumper 0805
4275	482205120008	0R Jumper 0805
4276	482205120008	0R Jumper 0805
4278	482205120008	0R Jumper 0805
4279	482205120008	0R Jumper 0805
4280	482205120008	0R Jumper 0805
4288	482205120008	0R Jumper 0805
4502	482205120008	0R Jumper 0805
4503	482205120008	0R Jumper 0805
4504	482205120008	0R Jumper 0805
4505	482205120008	0R Jumper 0805
4506	482205120008	0R Jumper 0805
4508	482205120008	0R Jumper 0805
4509	482205120008	0R Jumper 0805
4510	482205120008	0R Jumper 0805
4511	482205120008	0R Jumper 0805
4512	482205120008	0R Jumper 0805
4513	482205120008	0R Jumper 0805
4514	482205120008	0R Jumper 0805
4515	482205120008	0R Jumper 0805
4516	482205120008	0R Jumper 0805
4517	482205120008	0R Jumper 0805
4518	482205120008	0R Jumper 0805
4519	482205120008	0R Jumper 0805
4520	482205120008	0R Jumper 0805
4521	482205120008	0R Jumper 0805
4522	482205120008	0R Jumper 0805
4523	482205120008	0R Jumper 0805
4524	482205120008	0R Jumper 0805
4525	482205120008	0R Jumper 0805
4526	482205120008	0R Jumper 0805
4527	482205120008	0R Jumper 0805
4528	482205120008	0R Jumper 0805
4529	482205120008	0R Jumper 0805
4530	482205120008	0R Jumper 0805
4531	482205120008	0R Jumper 0805
4532	482205120008	0R Jumper 0805
4533	482205120008	0R Jumper 0805
4534	482205120008	0R Jumper 0805
4535	482205120008	0R Jumper 0805
4536	482205120008	0R Jumper 0805
4537	482205120008	0R Jumper 0805
4538	482205120008	0R Jumper 0805
4539	482205120008	0R Jumper 0805
4540	482205120008	0R Jumper 0805
4541	482205120008	0R Jumper 0805
4542	482205120008	0R Jumper 0805
4543	482205120008	0R Jumper 0805
4544	482205120008	0R Jumper 0805
4545	482205120008	0R Jumper 0805
4546	482205120008	0R Jumper 0805
4548	482205120008	0R Jumper 0805
4549	482205120008	0R Jumper 0805
4550	482205120008	0R Jumper 0805
4551	482205120008	0R Jumper 0805
4552	482205120008	0R Jumper 0805
4553	482205120008	0R Jumper 0805
4554	482205120008	0R Jumper 0805
4555	482205120008	0R Jumper 0805
4556	482205120008	0R Jumper 0805
4557	482205120008	0R Jumper 0805
4558	482205120008	0R Jumper 0805
4559	482205120008	0R Jumper 0805
4560	482205120008	0R Jumper 0805
4561	482205120008	0R Jumper 0805
4562	482205120008	0R Jumper 0805
4563	482205120008	0R Jumper 0805
4564	482205120008	0R Jumper 0805
4565	482205120008	0R Jumper 0805
4566	482205120008	0R Jumper 0805
4567	482205120008	0R Jumper 0805
4568	482205120008	0R Jumper 0805
4569	482205120008	0R Jumper 0805
4570	482205120008	0R Jumper 0805
4571	482205120008	0R Jumper 0805
4573	482205120008	0R Jumper 0805
4574	482205120008	0R Jumper 0805
4575	482205120008	0R Jumper 0805
4576	482205120008	0R Jumper 0805
4577	482205120008	0R Jumper 0805
4578	482205120008	0R Jumper 0805

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ELECTRICAL PARTS LIST - COMBI BOARD

4579	482205120008	0R Jumper 0805
4580	482205120008	0R Jumper 0805
4581	482205120008	0R Jumper 0805
4582	482205120008	0R Jumper 0805
4583	482205120008	0R Jumper 0805
4584	482205120008	0R Jumper 0805
4585	482205120008	0R Jumper 0805
4586	482205120008	0R Jumper 0805
4587	482205120008	0R Jumper 0805
4589	482205120008	0R Jumper 0805
4590	482205120008	0R Jumper 0805
4591	482205120008	0R Jumper 0805
4592	482205120008	0R Jumper 0805
4593	482205120008	0R Jumper 0805
4594	482205120008	0R Jumper 0805
4595	482205120008	0R Jumper 0805
4596	482205120008	0R Jumper 0805
4597	482205120008	0R Jumper 0805
4598	482205120008	0R Jumper 0805
4599	482205120008	0R Jumper 0805
4603	482205120008	0R Jumper 0805
4605	482205120008	0R Jumper 0805
4606	482205120008	0R Jumper 0805
4608	482205120008	0R Jumper 0805
4609	482205120008	0R Jumper 0805
4610	482205120008	0R Jumper 0805
4611	482205120008	0R Jumper 0805
4613	482205120008	0R Jumper 0805
4677	482205120008	0R Jumper 0805

COILS & FILTERS

5202	482215711832	Mains Filter 400µH not for /37
5321	482215762552	Coil 2,2µH 5%
5322	482215762552	Coil 2,2µH 5%
5324	482215762552	Coil 2,2µH 5%
5501	482215762552	Coil 2,2µH 5%
5502	482215762552	Coil 2,2µH 5%
5503	482215762255	Coil 18,5 Turns 1µH
5504	482215762255	Coil 18,5 Turns 1µH
5505	482215762255	Coil 18,5 Turns 1µH
5506	482215762255	Coil 18,5 Turns 1µH
5508	482252610704	Fe Bead100MHZ
5510	482215762552	Coil 2,2µH 5%
5521	482215762552	Coil 2,2µH 5%
5640	482215711235	Coil 22µH 5%

DIODES

6220	482213031878	1N4003G
6221	482213031878	1N4003G
6222	482213031878	1N4003G
6223	482213031878	1N4003G
6224	482213031878	1N4003G
6225	482213031878	1N4003G
6226	482213031878	1N4003G
6227	482213031878	1N4003G
6228	482213034173	BZX79-B5V6
6229	482213034142	BZX79-B33
6230	482213031878	1N4003G
6231	482213034174	BZX79-B4V7
6232	482213030621	1N4148
6233	482213030621	1N4148
6235	482213030621	1N4148
6236	482213034174	BZX79-B4V7
6240	482213031878	1N4003G
6241	482213031878	1N4003G
6242	482213031878	1N4003G
6243	482213031878	1N4003G
6244	482213031878	1N4003G
6245	482213031878	1N4003G
6248	482213031878	1N4003G
6249	482213031878	1N4003G
6250	482213031878	1N4003G
6251	482213031878	1N4003G
6257	482213030621	1N4148
6258	482213034173	BZX79-C5V6
6259	482213031878	1N4003G
6260	482213031878	1N4003G
6261	482213031878	1N4003G
6262	482213031878	1N4003G
6263	482213031878	1N4003G
6264	482213031878	1N4003G
6265	482213031878	1N4003G
6266	482213031878	1N4003G
6267	482213031878	1N4003G
6268	482213031878	1N4003G
6269	482213030621	1N4148
6320	532213080686	1N5392
6321	482213031878	1N4003G
6322	482213031878	1N4003G
6323	482213031878	1N4003G
6324	482213031878	1N4003G
6325	482213031024	BZX79-B18
6326	482213034441	BZX79-B22
6327	482213034174	BZX79-B4V7
6328	532213080686	1N5392
6329	482213030621	1N4148
6330	482213030621	1N4148
6331	532213080686	1N5392
6442	482213082978	LTL-16KPE-P
6443	482213082978	LTL-16KPE-P
6444	482213082978	LTL-16KPE-P
6502	482213034167	BZX79-F5V6
6549	482213030621	1N4148
6550	482213030621	1N4148

ELECTRICAL PARTS LIST - COMBI BOARD

DIODE

6553	482213031878	1N4003G

TRANSISTORS & INTEGRATED CIRCUITS

7233	932213922687	BD242BFP
7234	532213044593	BC369
7235	482213040959	BC547B
7236	482213041246	BC327-25
7237	482213040981	BC337-25
7238	482213060511	BC847B
7239	482213042804	BC817-25
7240	482213040981	BC337-25
7241	482213040981	BC337-25
7247	482213040981	BC337-25
7248	482213040981	BC337-25
7249	482213041246	BC327-25
7320	482213042804	BC817-25
7321	482213042804	BC817-25
7322	482213042804	BC817-25
7323	482213042804	BC817-25
7324	482213060373	BC857B
7329	482213010847	BDW94C
7330	482213040981	BC337-25
7330	482213040981	BC337-25
7331	482213060373	BC857B
7332	482213060373	BC857B
7333	482213042804	BC817-25
7391	482220916224	AN7125
7400	482213060373	BC857B
7401	482213040981	BC337-25
7402	532220911306	HEF4094BT
7405	482213060373	BC857B
7501	532220911102	HEF4052BT
7503	482213041096	BC550C
7504	482213041096	BC550C
7505	482213044568	ON4986
7506	482213044568	ON4986
7507	482213044568	ON4986
7508	482213044568	ON4986
7509	482213060511	BC847B
7510	482213060373	BC857B
7530	532220914482	HEF4069UBT
7537	482213060511	BC847B
7538	482213060511	BC847B
7543	482213060511	BC847B
7544	482213060511	BC847B
7545	482213060511	BC847B
7546	482213060511	BC847B
7547	482213060511	BC847B
7548	482213060511	BC847B
7554	482220931378	NJM4556MB
7556	319801044010	PDTA114ET
7641	482213041096	BC550C
7642	482213041096	BC550C
7643	482213041096	BC550C

Note: Only the parts mentioned in this list are normal service spare parts.

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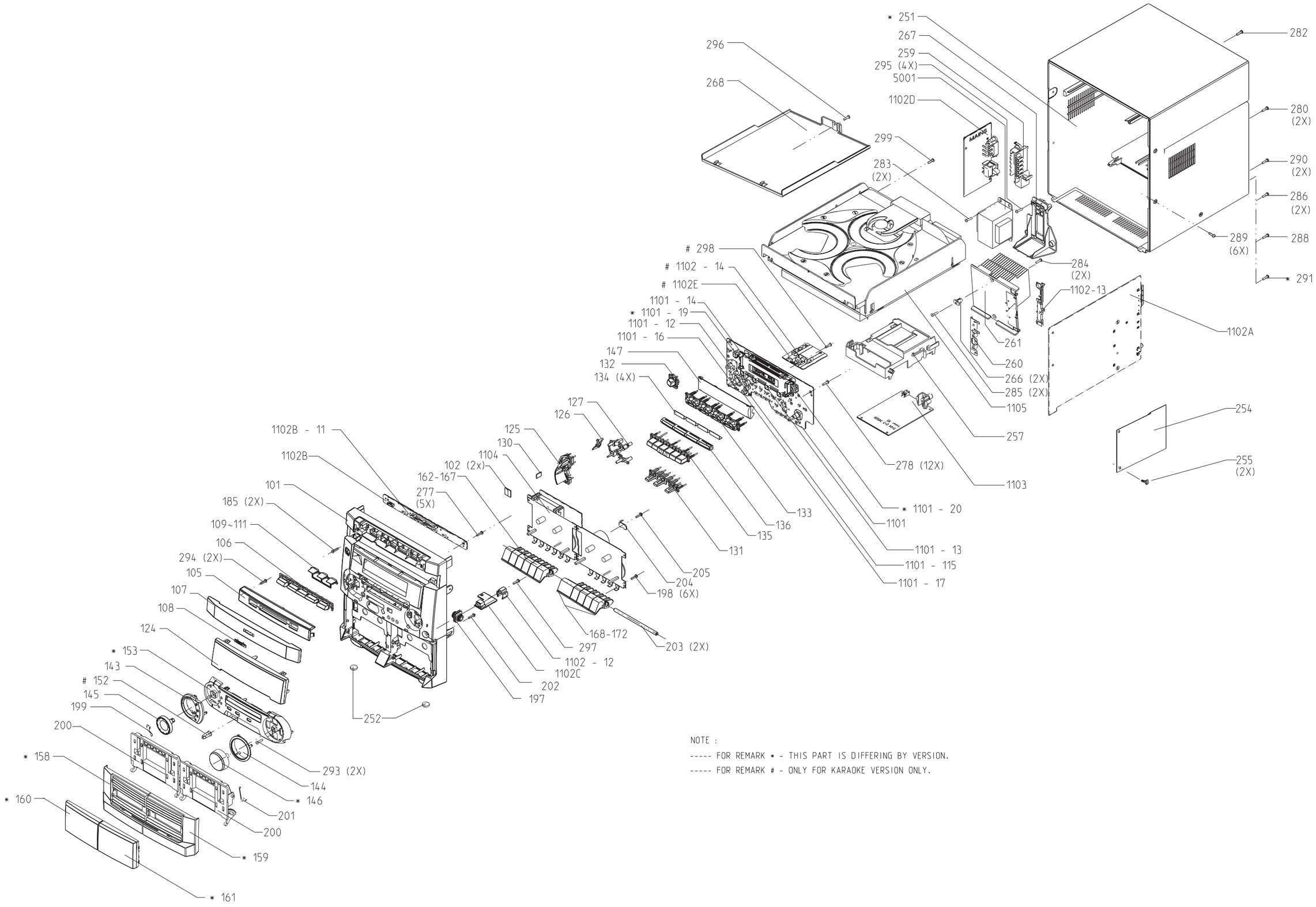
EXPLODED VIEW - MAIN UNIT



NOTE :

----- FOR REMARK * - THIS PART IS DIFFERING BY VERSION.

----- FOR REMARK # - ONLY FOR KARAOKE VERSION ONLY.

MECHANICAL & ACCESSORIES PARTS LIST - MAIN UNIT

101	313911810260	Cabinet Front Assembly
105	313911810270	Window CDC Control
106	313911789360	Button Set CDC Select
107	313911810280	Cover Tray CDC2
108	482245413408	Badge Philips
124	313911810800	Window Disp. FW-C3/37
124	313911810950	Window Disp. FW-C30/30/37
124	313911810520	Window Disp. FW-C30/21/21M
124	313911810290	Window Disp. FW-C35/37
125	313911810300	Button DBB Silver
127	313911468120	Lightguide DSC2
131	313911789400	Button Set Prog/Clock/Display
132	313911789410	Button Power On/Off
133	313911469720	Button Set Source Sel. Blue
135	313911810760	Button Set Controls
136	313911810310	Lightcap Source Select Blue
143	313911811580	Cover Ring Jog
144	313911810330	Cover Ring Volume
145	313911810340	Knob Jog Rotary
146	313911810350	Knob Volume Rotary
152	313911468030	Knob Karaoke /21/21M
153	313911810360	Cover Control Jog
153	313911810530	Cover Control Jog/Kar /21/21M
158	313911810370	Cover Cassette Left 2
159	313911810380	Cover Cassette Right 2
160	313911468520	Lens Cassette Left 2
161	313911468530	Lens Cassette Right 2
162-167	824000923460	Record Button Set Grey P422c
168-172	824000923470	Play Button Set Grey P422c
197	482252910322	Damper Assembly
199	482249270231	Spring Leaf
200	482244310881	Door Cassette (Mech)
201	482249242709	Spring Cassette Door
251	313911468250	Cabinet Rear /21
251	313911468580	Cabinet Rear /21M
251	313911468300	Cabinet Rear w/Matrix spk /37
251	313911468240	Cabinet Rear /37
252	482246240683	Foot Rubber SQ
255	482246693148	Spacer 5mm
260	482249211734	Spring IC
266	313911468040	Spacer Heatsink
349	313911877360	Surround Box (Matrix Spks)
350	313911877310	Loudspeaker Box
351	482230350063	FM Aerial 75R
351	482232011094	FM Aerial 300R /37
356	313922883610	Remote Control RC282425/01
384	482230350082	AM Frame Aerial
385	482232110249 ⚠	Mains Cord IEC /21/21M
385	482232110954 ⚠	Mains Cord /30
385	482232111466 ⚠	Mains Cord UL /37
386	482226321092 ⚠	Adaptor Plug 6A 250V /21
387	313911619350	Instruct. For Use /21/21M/30
387	313911619370	Instruction For Use /37
1451	482232012604	Flex Cable 9pin 22cm
1456	313911034180	Flex Cable 16pin 22cm
1556	313911034320	Flex Cable 6pin 40cm
5001	313911832100 ⚠	Mains Transformer /21/21M
5001	313911832090 ⚠	Mains Transformer /30
5001	313911832080 ⚠	Mains Transformer /37

LEFT/RIGHT LOUDSPEAKER BOX BREAKDOWN

996500002233	Woofer 5,25" 6R 30W
996500002232	Tweeter 2,5" 6R 30W
996500002236	Cloth Frame Assembly
996500002234	2,2µF/50V Wire Assembly

SURROUND BOX BREAKDOWN

482224010374	Speaker 3" 6R 7W

Note: Only the parts mentioned in this list are normal service spare parts.

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SCREW LISTS - MAIN UNIT

185	D3 x 12
198	D3 x 12
202	D3 x 12
205	D3 x 12
277	D3 x 12
278	D3 x 12
280	D3 x 12
282	D3 x 12
283	D3 x 16
284	M3 x 15
285	D3 x 16
286	D3 x 12
288	D3 x 12
289	D3 x 12
290	D3 x 12
291	D3 x 12
293	D3 x 12
294	D2 x 8
295	D3 x 16
296	M3 x 6
297	D3 x 12
298	D3 x 12
299	D3 x 12